James B. Herrick Memorial Lecture

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The physician, scientist, and teacher whose memory we honor in this annual ceremony is Dr. James B. Herrick. Several previous Herrick lecturers have reviewed selected contributions Herrick has made to medicine, and even his fondness for Chaucer. I, too, have selected highlights of Herrick's career, particularly his contributions to medicine, to emphasize how remarkably similar the problems that faced him and the field of medicine in the 1930s were to our own today.

My insights into Herrick's contributions come from his books and papers, especially *Memories of Eighty Years.* Herrick was born in Oak Park, Ill, in 1861. In September 1878, he entered the University of Michigan at Ann Arbor as a student of literature. By the time of his graduation, however, he had chosen medicine as his lifework. Because Herrick's father had persuaded him to teach school before beginning his studies in medicine, for a short period he taught elementary Latin and Greek and one class of history.

Herrick entered Rush Medical College in June 1885. He did well in medical school and obtained an internship at Cook County Hospital in Chicago, which had one of the most desirable training programs in the country. After Herrick completed his residency, he became an assistant to Dr. Charles Earle, a practitioner on Chicago's West Side. Some of the many important lessons Herrick learned from Earle included the idea that two kinds of people require treatment: those who are sick and those who think they are sick. Earle also taught Herrick not to be afraid to face the revelations of the postmortem examination even though it might reveal an error in diagnosis. Earle believed that "the best doctors sign the most, usually not the fewest, death certificates." While working with Earle, Herrick also served as an assistant demonstrator of anatomy at Rush and taught at the Women's Medical College. After 1 year, Herrick left Earle's practice to begin work as an independent practitioner of medicine.

As a private practitioner, Herrick continued to lecture at the Women's Medical College and make rounds at the county hospital. Like many of his colleagues, after several years of private practice, Herrick traveled to Europe, where he collaborated with the renowned pathologist Dr. Hans Chiari in Prague. Chiari was considered a "steam engine" for work, routinely performing five or six autopsies a day. After 3 months in Prague, Herrick returned to the United States and continued his busy schedule. He soon published the highly regarded *Handbook of Medical Diagnosis.*

Four years later, Herrick returned to Europe and Vienna to work with the "brilliant internist" Dr. Edmund Neusser, who was head of the Second Medical Clinic. By that time, Herrick had come to realize that chemistry was destined to play an important role in medicine, but he found it increasingly difficult to comprehend articles that involved the application of chemistry to clinical medicine. Thus, in the fall of 1904, at the age of 43 and still busy with consultation practice, Herrick entered the University of Chicago to take courses in chemistry. For 1 year, he attended the university four or five mornings per week, taking a laboratory course in physical chemistry. Subsequently, he secured a place in Dr. Emil Fischer's laboratory. Fischer had won the Nobel Prize for his pioneering research on sugars, and at this time he was engaged with the problem of splitting proteins into their constituent parts and trying to reconstruct the albumin molecule.

Some of Herrick's teachings from this period deserve special attention. He emphasized that a physician becomes a physician at the bedside but that it is also necessary to acquire additional skills to make observations that elucidate the mechanisms responsible for human illness. He subscribed to Cagal's notion that "a considerable part of the labor of the master should be employed in molding pupils to succeed in surpassing him."

Herrick made important contributions as a clinical scientist. In 1912, he published the paper for which we know him best, "Clinical Features of Sudden Obstruction of the Coronary Arteries." In this report, he described a patient with coronary thrombosis in whom he had made an antemortem diagnosis. However, the paper that he read before the Association of American Physicians aroused no interest. In Herrick's words, "It fell like a dud." In his report, Herrick had amplified Heberden's earlier description of angina pectoris as a disorder of the breast marked with strong and peculiar symptoms, frightening beyond the amount of danger it presents, and not extremely rare. Both Heberden and Herrick ascribed the term angina pectoris to the site of the chest discomfort and the sense of strangling and anxiety that attends it. Even though his paper in 1912 "fell like a dud," Herrick was firmly convinced that his conclusions were right. He continued doing what he called "missionary work" by hammering away at the topic, albeit with little apparent effect on his listeners. I know that some modern-day
cardiologists feel the same way on occasion as they try to have their discoveries appreciated.

In 1918, Herrick again read a paper before the Association of American Physicians on coronary thrombosis that included reports of two additional cases with autopsies. Today, we know through the angiographic observations of DeWood et al in 1981 and postmortem observations of Buja and Willerson and others that Herrick was right in his belief that sudden thrombotic obstruction of a coronary artery causes most myocardial infarctions. Thus, it has taken approximately 70 years to prove Herrick correct!

Herrick made another important contribution to medical science. In 1904, he examined a black male with anemia and a sore on his ankle. In the hematological examination, Herrick discovered that the blood from this patient showed numerous elongated or sickle-shaped red cells. Although the discovery was made in 1904 and was confirmed in 1906 by another physician, Herrick waited until 1910 to publish his observations, which led to the clinical recognition of sickle-cell anemia.

Herrick believed that no member of the Association of American Physicians had a greater influence on him than William Osler. He had read Osler’s textbook, Principles and Practice of Medicine, in 1892, a treatise of almost 2000 pages. Thereafter, in a laudatory review of the book, he closed with the statement that it was not extravagant praise to call the work “the best textbook in English on the practice of medicine.” Thus, Herrick emphasized and practiced the admonition that the important contributions of colleagues should be identified and credited with enthusiasm.

Herrick was impressed with and adopted Osler’s habit of sending brief notes to colleagues. These notes might contain an encouraging word about a recently published article, a hint to be attentive to some former pupil, or an offer of assistance to a recently appointed professor of medicine in a distant medical school.

Herrick’s philosophy of life was that “men succeed because of native ability and in small measure because of chance, but chiefly through hard work, through a knowledge of their special vocational subject, and through their ability to apply this knowledge.”

The training needs of future clinicians were much discussed in the mid 1920s and 1930s. There were many divergent opinions. In 1926, Herrick outlined his hopes for future clinicians:

1. The future clinician must approach medical service with the philosophy that “our usefulness as physicians to society as a whole is, after all, our reason for existence and must be the chief object of our policies, as it is a standard by which our worth must be measured.”

2. The training and abilities of both the general practitioner and the specialist must be improved. Herrick pleaded not for a substitution of the specialist for the general practitioner, nor for some artificial restriction of the number of specialists, but rather for “a modified, improved practitioner and an improved specialist.” He emphasized the need for more intimate and mutually helpful relations between these two groups. This is still a critical point for the future of our profession.

3. There is no substitute for the physical examination and careful documentation of a patient’s medical history. Herrick defended the stethoscope and argued against reliance on high-technology methods which, in his day, included radiography and electrocardiography.

4. A high-grade undergraduate education in the essentials, with intensive study in one or two subjects, even though it might require more time and money, will help to mold physicians who are more contented, more progressive, and more efficient than those graduating from a school with a standardized, low-level average course of study.

This latter idea was prompted by Herrick’s observation that some of the medical schools and postgraduate training programs in his day were lowering their requirements so as to quickly graduate students to fill the shortage of doctors in rural areas. He believed it was an injustice to students to pursue a course of study that consciously trained them to be mediocre:

Somewhere in his course each student should be given the opportunity to understand the meaning of the word thorough. He should pursue the study of some subject or a few subjects far beyond the elementary phase. . . . Unless this is done in the study of medicine, the doctor who is turned out is mediocre: power that may be lying dormant within him of which he is unconscious is never developed; he is a man with no particular aim, diffuse and forceless. His later work lacks live interest. He becomes a mere money getter. He loses self-respect.

Herrick believed that “knowledge is power and should oftener be power for good.” Only those with detailed knowledge could realize the superior possibilities of expert treatment. Herrick did not believe that doctors who received an abbreviated (inferior) education would necessarily go into the country to work, or if they went there, that the people in the country would employ them.
Herrick pointed out the tendency of many doctors to overestimate the value of the instrumental and the laboratory side of medicine. "There is an air of finiality about these tests that is far from warranted by the facts," he said, "but it attracts us." To elicit a history or do a physical examination was commonly viewed as being less scientific and containing a large element of human fallibility. Herrick believed the adage that "the history is worth at least 50% of the diagnosis." He deplored the emphasis on absolute laboratory dependence—it trained the student not to examine or to think, but rather to resort to a test tube, a mechanical device, or the surgeon's knife. In Herrick's opinion, other risks included the student's accepting test findings at face value, forgetting the possibility of error on the part of the method or the technician. He emphasized that one may erroneously perceive a deus ex machina that frequently at the climax of a case springs forth as in Greek tragedy to solve the riddle and straighten out the otherwise hopeless tangles. He believed the tests available then and in the future should be used as aids that are confirmatory and corrective but not the sole arbiters of a case. They were to be incorporated into the evidence along with history, symptoms, and science. They would sometimes be of negative value; at other times, of supreme importance.

Comparing clinical practices on both sides of the Atlantic, Herrick identified a striking difference between the education and practice of physicians in Great Britain and the United States. The British appeared to depend too little on the technical side, relying more on observation and examination of the patient, whereas in the United States, physicians placed too much reliance on the instrumental and laboratory end. Herrick believed that the real physician was the general practitioner who restudied symptoms and repeated physical examinations with appropriate laboratory and instrumental tests to reach a correct diagnosis.

He hoped that future clinicians would be inspired by the spirit of research. Unless the clinician came into contact with the researcher, he might become a "hack worker," not inspired by the search for the new and unknown or even familiar with the methods of research. He might even be unable to evaluate the new as it was announced to the medical world. Untrained in criticism of methods, of work, or of habits of thought, he might implicitly believe the printed word merely because it was printed or because it emanated from some famous clinician, well-advertised clinic, or popular laboratory. "Our clinician," he said, "must get some of the fire and enthusiasm of these research men in order to live and not merely exist, in order to produce and not merely to do the daily grind. Here and there, the student or graduate will thrill as the consonant chord in himself vibrates in the atmosphere of research, and a real investigator will be discovered." According to Herrick, investigators, like Cicero's poets, are born rather than made, but they sometimes go undiscovered. Concentration and intensive work in one area might well be handled by the one who has intensively studied the subject, as Herrick expected the leader and hospital clinician to do, largely from the academic and scientific side. However, he emphasized that "clinical medicine—using medicine in its broader sense—should also be presented to our students by the one who is himself a clinician, a practicing doctor. Such a teacher should be well informed as to facts, well trained as to methods. He must be expert in the application of his knowledge and in diagnosis and treatment. He must be intellectually as scientific as his laboratory colleagues." Herrick pleaded for a teacher who was a practical clinician and whose art was based on a deep knowledge of fundamentals and principles.

Herrick emphasized the importance of experience for physicians of the future. Bedside experience based on an acquaintance with scientific methods and knowledge not obtained solely from books or the laboratory makes the best clinician. Herrick believed it was important that the clinician of the future come into close contact with this type of person—"not when the teacher is in the making, as when he is an assistant, but when he is made, when he is a big clinical teacher." His methods, techniques, encouragements, warnings, impressions, even his way of handling the patient as well as the disease, and his personality should be available to the student who is to go into practice.

In summary, Herrick believed in 1926 that the clinician of the future would be a professional man, not a tradesman—one who would see in his patients human beings whose distress appealed to his heart and not alone to his commercial instincts or his scientific and technical skill:

He will be practical, but inspired to ever improving work by the spirit of investigation. While clinging fast to that which is good of the old he will be no slave to tradition, but will be able to throw aside the disproved old for the proved new. He will be, and will be regarded as being, a scientific man. He will become the family confidante as of yore, the family advisor, well recompensed for his services. He will be self respected and respected by others.

As cardiologists, we are probably most interested in Herrick's major contribution to cardiovascular medicine, in which he stressed the importance of acute coronary occlusion leading to heart attacks. He gave the medical world by far the best description of angina pectoris at the time, and he demonstrated that sudden obstruction of a coronary artery was not necessarily fatal. As I have noted, he did this amidst skepticism, and he spent the latter part of his life trying to persuade others of the correctness of his observations. In espousing his own observations, he credited the discoveries of others like Robert Adams, who almost 100 years previously had come close to the discovery of coronary thrombosis, Adam Hammer, who had described the first case of coronary thrombosis with correct antemortem diagnosis in 1878, and others who published the first completed description of the disease in 1910.

Although he was busy as a teacher, physician, clinical investigator, and leader of American medicine, Herrick found the time for certain hobbies, perhaps the best known of which was his love for reading Chaucer. During his teenage years, he had read all of Chaucer's writings. In 1931, he gave an after-dinner address at a meeting of the Association of American Physicians, subsequently published in the Annals of Medical History, entitled "Why I Read Chaucer at 70." In that address, Herrick claimed that he read Chaucer at age 70 as he had at age 19, because of his "kindly philosophy, his friendliness, his optimism, his ever present humor, his
pleasure in knowing and describing people, his skill as a narrator, his clarity, his love of nature and of books, and his ability to make music of the early English language."

My own review of James Herrick's contributions has impressed upon me the similarity of the problems that confronted Herrick and his colleagues in the 1930s and those we face today, including the problems of training young physicians, meeting practice demands, maintaining and expanding research in cardiology, and the political pressures that impact our activities. In the following, I will point out similarities of these positions, not only to emphasize how relatively little these issues have changed but also to suggest approaches our profession and we as individuals might take to resolve such problems in the future.

Many important advances in cardiovascular medicine and surgery have occurred since Herrick's death in 1954 (Tables 1 and 2). Of course, this is a simplified and incomplete overview of the major advances in our diagnostic capabilities, conceptual understanding, and ability to treat cardiovascular diseases. A momentary pause to consider the impact these advances have had on the health of humans gives me a sense of great pleasure. In my opinion, however, we have only begun. Even with the significant problems that we face in the future, the real revolution in diagnostic and therapeutic capabilities is immediately before us.

In the coming years, the pressures will be extreme for both cardiology and internal medicine training programs to train fewer specialists and more generalists (Table 3). The consensus in this country is that there are too few practicing general physicians and too many specialists and that this imbalance must be corrected.

The solution usually proposed is to train more generalists so that a physician will be available to address the problems of every needy patient on a timely basis. Currently, many patients wait longer than they should to see a physician. Talented medical help may not be available in their community, medical charges may be excessive, and some of the diagnostic testing and therapeutic intervention is unwarranted and wasteful and adds major expense to the health care system. If we accept these facts—whether or not we agree with the political arguments surrounding them—an extraordinary opportunity awaits us in seeking better ways to meet the health care needs of our country while improving our specialty by ensuring that the future generalist is knowledgeable and capable in cardiovascular disease recognition and treatment and knows when to refer patients to a trained cardiologist. This type of training will require the cooperation of cardiology and internal medicine. The other opportunity afforded us as cardiologists is that of selecting and training fewer physicians as cardiologists, identifying those who may be even superior to us in their training and in their commitment to serve, teach, and discover. Thus, our selection process in the future can and should be focused toward even more rigorous selection of the best possible trainee.

Research grants are increasingly competitive and more difficult to obtain. Today, adequate research funding simply does not exist in several areas of cardiovascular medicine, especially for clinical research. This problem is discouraging, and it represents an impediment to the recruitment of young physicians who might otherwise consider medicine as a profession and academic medicine and cardiology as a future career. Political pressures sometimes dictate the availability of funding for specific diseases, with a consequent draining of funds from other research areas that are perhaps politically less attractive but still very important for understanding the mechanisms responsible for cardiovascular diseases. However, there are opportunities in this area as well.

The leaders in cardiology must think, plan, and communicate at all levels to set priorities for both clinical and basic research. They must attempt to ensure that adequate funds exist for the most important investigator-initiated basic research in cardiovascular medicine so that creative and well-focused programs integrating basic developmental and clinical research can occur. In basic research, the opportunities for discovery...
related to cellular, subcellular, and genetic mechanisms of disease and the application of these discoveries to the prediction, cure, and prevention of human disease have never been greater. Today, many young scientists interested in cardiovascular medicine are acquiring the training necessary to conduct basic research with the conviction that they may participate in the eradication of selected major cardiovascular problems the mechanisms of which we do not understand and for which there is no cure. There are enormous opportunities to incorporate this fundamental science and the best basic scientists into research structures, some of them new, that attack the fundamental basis for selected cardiovascular diseases. Many models are possible. At my own institution, we have approached this problem in two ways: (1) Private support for a biotechnology effort has been developed to focus basic molecular biology and immunology research on the vascular endothelium. Molecular biologists and immunologists have been recruited to work together with full-time academic physician/scientists to examine the problems of endothelial injury and dysfunction as they contribute to cardiovascular diseases. (2) Monies have been raised privately and from university and hospital sources to develop an Institute of Molecular Medicine for the Prevention of Human Disease in which 8 to 10 different research centers will focus individually on one or two important but poorly understood diseases. The expectation is that from an understanding of their pathophysiology will come the ability to predict, cure, and prevent these diseases.

Governmental support is not part of either of these efforts. Both the biotechnology effort and Institute of Molecular Medicine for the Prevention of Human Disease are closely linked to a medical school, its department of medicine and cardiology division, and other medical school departments and institutions throughout the Texas Medical Center in Houston. Almost certainly, similar kinds of efforts are ongoing at other major medical centers in our country. What if a similar effort toward the development of fundamental basic research linked closely to clinical medicine problems existed at every major medical center in our country? Assume that at least some of the best-trained and most capable basic and clinical scientists and physician/teachers worked together in such efforts. I predict that the result would be great progress toward prediction, cure, and prevention of selected cardiovascular diseases. I am personally familiar with the difficulties in developing resources such as these, but the potential for research progress with strong clinical application is great. And it is well worth our time and investment. From institution to institution, resources, opportunities, and commitment vary. Yet even on a small scale, progress can be made on fundamental and clinically important cardiovascular problems, leading to their ultimate eradication.

Clinical research poses more difficult problems in its funding. Acquiring governmental support for clinical research is difficult. The pool of clinical investigators is decreasing. Their training is often not carried out with the same foresight or rigor that occurs within the best basic research laboratories. Clinical variables are difficult to control, definitive answers are often more difficult to obtain, and consequently, clinical grant requests are easier to criticize. Nevertheless, there is major opportunity here as well. One might ask: Have we developed focused clinical research training programs at my institution? Do we have an opportunity for the young physician/teacher/aspiring clinical investigator to spend protected time learning research methods, especially clinical research methods, including biostatistics and epidemiology, hypothesis testing, data gathering, and the research protocol? I am concerned that, in general, we have not. Why not? Does this require enormous governmental support? Could it not be accomplished if there were a willingness and commitment on the part of clinical leaders for planning and working together and encouraging the young physician with the intellectual and personal capabilities to participate in such an effort? At two Texas medical schools with which I am familiar, there are new training programs for clinical investigators, especially medical residents in their last year of medical training or the year thereafter, chief medical residents, and selected subspecialty fellows (including cardiology fellows). Participants in these programs take courses in biostatistics, epidemiology, and clinical research methods while working with clinical investigators leading programs in a clinical research center of a major university hospital. This type of training program should provide classroom and on-site clinical training and combine learning with the excitement of discovery and clinical application. I am certain that similar efforts exist at other medical institutions. It is this type of opportunity and encouragement that will help develop future clinical investigators in cardiovascular medicine.

In the future, there will be enormous opportunities for such clinical investigators to work cooperatively with scientists committed to the elucidation of basic mechanisms responsible for human disease. They can expeditiously apply the basic insights and therapeutic developments emanating from the research laboratories to humans—sometimes in the form of gene or gene product therapy, sometimes in the form of small-molecular-weight inhibitors, and sometimes with combined clinical therapies, such as angioplasty, atherectomy, radiofrequency wave, laser, coronary bypass, or other treatments with fundamental interventions that preserve the power of that intervention. The future should be an exciting period for clinical investigators now afforded opportunities to serve as investigator and therapist in ways that have not been possible previously.

We cannot control all or even most aspects of governmental regulation of cardiovascular medicine. But we can serve as vigorous consultants to government officials concerning the needs, priorities, funding, and training necessary to successfully treat patients with cardiovascular diseases. Leaders in cardiovascular medicine need to work together in a manner that is perceived as knowledgeable, honest, and committed to the health of mankind. Such efforts will have an impact on governmental planning and regulation, sometimes preventing the development of inappropriate and damaging policies. Further, we must be willing to fight for what is correct, but we must do it together to be effective, and in a way that can never be perceived as being only self-serving to the medical profession and protective of its financial base.

In regard to tensions between departments of medicine and cardiology, I believe the major problem is one of communication. We have common problems and deficiencies and usually common ambitions in the
development of training programs, application of service, and discovery. The major solution to these problems is thoughtful discourse in planning between the leaders of departments of medicine and cardiology divisions. It is important that no one attempt to develop an island for a personal agenda and that planning be in the best interests of training, service, and discovery in medicine generally and in cardiovascular medicine specifically. Of course, departmental chairmen need to respect the needs, capabilities, and potential of cardiovascular medicine. This has not always been the case, especially with chairmen who are not themselves cardiologists and thus have little knowledge of the training needs and severe time demands of cardiologists who must serve as teachers, practitioners, and investigators while facing the challenges of caring for patients with serious cardiovascular problems. With mutual respect and cooperative planning, however, I believe that much can be done for the development of outstanding training programs, arenas for basic and clinical research, and environments for providing the best possible medical care. Departmental chairmen who are cardiologists can help in this process, but cooperation and interest in the whole will be needed from cardiology division leaders as well. Departments of medicine and cardiology divisions share the need to train physicians in both internal medicine and cardiovascular medicine. With the training of more generalists, it will be important that these generalists are well educated in cardiovascular medicine. There will be an opportunity for those of us who work in cardiology to ensure that such training is comprehensive. This cannot be done as well if there is a separation between departments of medicine and cardiology divisions.

Medical care for patients with both medical and cardiovascular diseases is best addressed in a continuum between internal medicine and cardiology, not in an environment in which the sole preoccupation is with either cardiovascular or internal medicine problems. Conversely, service needs within cardiology, including the opportunity to select leaders for cardiac catheterization laboratories, echocardiography, nuclear cardiology and magnetic resonance imaging laboratories, electrophysiology and pacing units, general cardiology consulting, and service must rest primarily within the cardiovascular division. Cardiology leaders themselves are in the optimal position to select the best physicians, teachers, and investigators and encourage their personal growth and development. Hospital directors and chairmen of departments of medicine need to trust each other and work together to support and make available necessary funds for support of these diverse efforts within cardiovascular medicine. If the environment is one of cooperation, communication, and collaboration with general respect among all parties, this will proceed in the desired manner. I believe it is critically important to develop this type of environment at our respective institutions. If we want to do this and understand the necessity, we can.

I understand the problems that confront us, and while I am concerned, I am also optimistic about the future. The potential and opportunities to influence the course of cardiovascular diseases and future development of our specialty have never been greater. We live in an exciting time in medicine, one in which there will be changes in the education of physicians, in the organization of their practices, in the structure of medical schools and their departments, and in the opportunity to predict and cure cardiovascular disease. Failing to recognize this time of enormous change or ignoring the pressures and needs will not help. Instead, we must address these problems as opportunities. Specifically, I recommend the following:

1. Select and train generalists in medicine and cardiovascular medicine who are knowledgeable in cardiovascular medicine.

2. Train fewer but adequate numbers of cardiovascular specialists who are rigorously committed to careers as practitioners of the highest caliber of cardiovascular medicine and as teachers or investigators, or both.

3. Sustain and further develop financial support for basic and clinical research.

4. Integrate basic and clinical research with a strong focus on the need to predict, cure, and prevent cardiovascular diseases.

5. Work together with departments of medicine and hospital leaders to ensure patient access, outstanding teaching, service, and research programs.

James Herrick finished his career as an active physician, teacher, clinical investigator, and role model for young physicians in training. His philosophy was that we are in this world for a nobler purpose than to drink and be merry, that it is our duty to develop our capabilities, and that there is no greater satisfaction than that which comes from helping others.

Giving ourselves to the teaching, training, service, and discovery needs of cardiovascular medicine wholeheartedly and with a commitment to help create the resources, focus the effort, and work together will add to the sense of personal satisfaction that we gain as physicians and scientists. Hopefully, at the end of a time of such commitment, we might feel as Herrick did in this "Doctor's Farewell":

I know the night is near at hand,
Mist lie low on hill and hay,
The autumn sheaves are dewless, dry;
But I have had the day . . . I have had the day.

Appendix

Past Recipients of the James B. Herrick Award

1968 Hermann Blumgart, MD
1969 Franklin D. Johnston, MD
1970 Eugene A. Stead, Jr, MD
1971 Tinsley R. Harrison, MD
1972 Howard Burchell, MD
1973 Paul Dudley White, MD
1974 Helen B. Taussig, MD
1975 Lewis Dexter, MD
1976 James B. Warren, MD
1977 George E. Burch, MD
1978 W. Proctor Harvey, MD
1979 Paul N. Yu, MD
1980 J. Willis Hurst, MD
1981 Eugene Braunwald, MD
1982 Richard S. Ross, MD
1983 Charles Fisch, MD
1984 T. Joseph Reeves, MD
1985 H.J.C. Swan, PhD
1986 Robert A. O'Rourke, MD
1987 Harold T. Dodge, MD
1988 Elliot Rapoport, MD
1989 Shabbudin Rahimtoo, MD
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References

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