President’s Page: Medical History: A Valuable Tool to Help Us Frame the Present and Predict the Future

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The history of medicine serves several useful functions today, when doctors and the American health care system confront many challenges. Physicians live and work in an era of escalating expectations, eroding autonomy, and decreasing discretionary time. There is so much—far too much—to know, to learn, and to do. Understandably, many doctors are concerned about the future of medicine as they watch so many powerful political, economic, and social forces transform medical practice, research, and education. In this context, the history of medicine provides useful perspective and teaches valuable lessons. Just as a patient’s history helps us assess the significance of their symptoms and develop a diagnostic and therapeutic strategy, the history of medicine provides important perspective on present and future challenges and opportunities.

Medical history research and publishing have grown dramatically in recent years. The field has been energized by an infusion of trained professionals who have brought with them a variety of interesting and innovative approaches. Some have medical training, but many do not. In addition to a growing number of physician-historians, there are social historians, sociologists, economists, and members of a dozen different disciplines who share an interest in the history of health care. Meanwhile, more historical studies focus on the recent rather than the remote past. As a result, the history of medicine has become more accessible and more relevant. This new type of history seeks to blend the scientific and social dimensions of medicine. This makes sense if you consider the profound effects that external forces have on present-day medicine. Think, for example, of the incredible impact Medicare reimbursement has on cardiology and of the crucial (and understandably self-interested) role the pharmaceutical industry plays in funding clinical trials. By understanding how current circumstances such as these evolved, we can better anticipate, evaluate, and potentially influence the various factors that will shape the future of health care.

Many prominent physicians have promoted medical history as a tool to better understand diseases and to help frame the present and speculate on the future. William Osler (1), the English-speaking world’s leading physician a century ago, put it this way: “By the historical method alone can many problems in medicine be approached profitably.” Paul Dudley White (2), America’s first academic cardiologist, also thought medical history was important. By looking back, he wrote in 1950, “we acquire a better perspective of our own place in history with the humbling realization of our role as merely a link in the long chain of the acquisition and application of medical knowledge.”

MILLISECONDS OR MILLENNIA: LIFE IN THE FAST LANE

Cardiologists can benefit from historical perspective as much as anyone, despite the fact that our specialty focuses on tiny units of time. Electrophysiologists record events in milliseconds. Echocardiographers measure blood flow in seconds. Interventionalists count balloon inflation time in minutes. In historical terms, these units of measurement are irrelevant. That’s not to imply, however, that specific events in unique patients are insignificant. Cardiac pathophysiology and our patients’ problems force us to focus on short intervals. Understandably, most of us are too busy thinking about the events of the moment, the hour, or the day to pay much attention to historical trends measured in years or decades, let alone centuries. I would encourage you, however, to view contemporary challenges and opportunities in a larger historical context.

The pace of discovery and innovation in American cardiology has accelerated for five decades, fueled by a blend of altruism and entrepreneurialism and supercharged by massive federal funding, the high prevalence of cardiovascular disease, and increasing societal expectations. As a result, physicians, hospitals, insurers, and our government now struggle with whether, when, and how to incorporate new drugs, devices, and techniques into clinical practice. The challenge is compounded because contemporary American culture covets the “newest” and “latest” of everything! Our obsession with newness isn’t new, however. Chicago physician James Herrick (3), best known for his classic description of acute myocardial infarction (MI), declared in 1903, “There is a tendency in these hurrying modern times to seize upon that which is new and quickly to forget the old.” I’m not sure whether it’s reassuring or disconcerting that this quotation was published a century ago. Regardless, Herrick’s rhetoric reminds us that “hurry” and “modern” are relative terms.
Today, physicians are inundated with information and requests for information. In recent years, 24/7 cable news, cell phones, and the Internet, with its e-mail and intrusive instant messaging, have contributed to our infatuation with up-to-the-minute information and constant connectivity. Long before the invention of telephones and televisions—not to mention computers and the World Wide Web—physicians placed a premium on timely, up-to-date knowledge. Generations ago, overwhelmed by all they had to learn, ambitious American doctors were frustrated by the short lifespan of the new knowledge of their day. For example, Harvard physician Henry Ingersoll Bowditch (4) declared in 1867, “Modern science does not let any book remain long useful.”

During the 19th century, journals rapidly replaced books as the primary vehicle for documenting and distributing new knowledge. In 1893, Philadelphia physician and editor George Gould (5) declared that the medical profession suffered from “journalopathy.” He protested, “We are, in fact, fast becoming journalomaniacs. We are frittering away our professional time, money, and energy in the useless multiplication of medical journals.” But reflect on this: when Gould wrote those provocative words, there were no cardiology journals of any kind—anywhere in the world. This is not surprising, because the specialty of cardiology is a 20th-century invention (6).

Today, there are more than 100 cardiology journals published around the world, and—despite our current infatuation with internet-based information transfer—several new ones are launched each year. It’s doubtful that this steep trajectory of journals will persist much longer. Most medical journals depend on advertising income, but pharmaceutical companies are pumping more and more money into direct-to-consumer advertising each year. On the other hand, I predict that electronic education will complement paper-based education rather than replace it. Several earlier pessimistic prognostications about information and entertainment technology proved wrong: television did not totally replace radio; videotape players did not dramatically decrease demand for local cinema; and CD-ROM did not decrease the market for printed textbooks.

History can also teach us about ourselves: how we, as individual physicians, confront change and challenges. Much has been written about physician burnout in this era of managed care, but the phenomenon is not new. Medical history provides a useful perspective on this perplexing problem. In a series of letters that William Osler (7) wrote in 1904 to friends and colleagues, he explained his decision to leave Johns Hopkins to become Regius Professor of Medicine at Oxford in words and phrases that reflect his personal struggle with burnout. These letters, written when Osler was 54 years old, contain compelling evidence: “I am tired of the incessant racket of my present life.” “I could not possibly last long at my present pace.” “I am tired of the strain of the past few years which could only have one end—a breakdown.” When I published an article on Osler’s personal struggle with burnout in The New England Journal of Medicine in 1989, several doctors wrote to me to express their relief that someone as seemingly successful as Osler had, in fact, suffered from burnout.

HISTORY, HUMILITY, AND WHAT IS TRUTH

History also teaches humility. I could cite many examples that apply to institutions, organizations, nations, and entire cultures, but I will focus on humility at the level of the individual. The aphorism “fame is fleeting” applies to medicine, as it does to any other area of human endeavor. Almost all of the most influential physicians and medical scientists of earlier generations are now forgotten. Even earning an eponym or winning a Nobel Prize—or both—does not immunize one against obscurity. For example, I doubt that many cardiologists know who Willem Einthoven was, where he worked, or what he accomplished, despite the fact that 2002 is the centennial of his invention of the electrocardiograph. I understand those who say, “Who cares?” Compared with the “who, what, where, and when” questions, I find the “why and so what” questions much more interesting and informative. For example, what led Einthoven to invent the electrocardiograph and what was the significance of his invention in terms of research, patient care, and the development of cardiology as a specialty (8). The answers to those historical questions provide perspective on the present-day dynamics of discovery, dissemination of new knowledge, and discipline-building.

History is also humbling because it shows how ephemeral “expert opinions” can be. Increasingly, therapeutic decisions in cardiology are guided by evidence derived from randomized clinical trials that are customized for a unique patient. Most of our management decisions, however, are still based on traditions of care that have been shaped by less rigorous data or by the opinions of experts. The missionaries of evidence-based medicine rightly point out that history reveals that “opinion leaders” are sometimes wrong—occasionally very wrong. Having said this, I want to emphasize that it is important to guard against “presentism,” that is, the tendency to evaluate the attitudes and actions of earlier generations of physicians in terms of our current understanding and approaches. Rather, we must judge their recommendations and practices in terms of their scientific and social context rather than our own. Future generations will surely view some of our current theories of pathophysiology as naïve and our “state-of-the-art” treatments as primitive and misguided. A few historical examples illustrate the point.

Two hundred years ago, many leading physicians of Europe and North America used leeches and lancets to bleed patients with “fever” and various other problems. George Washington’s death in 1799 was accelerated by aggressive blood-letting. During a 13-h period shortly before his death, doctors removed 2.5 quarts of blood from the former president. By current standards, this “treatment” seems incomprehensible (if not homicidal). Then, however, blood-letting was championed by many prominent physi-
cians, notably Benjamin Rush, a physician-signer of the Declaration of Independence. This “heroic” therapy reflected the lingering influence of Galen’s humoral pathology (after 1,500 years) and late 18th-century interpretations of pathophysiology.

History also provides many examples of the time lag that often separates the announcement of an innovation and its acceptance. The 20th-century history of the diagnosis and treatment of coronary heart disease illustrates how some new pathophysiological interpretations and innovations in diagnosis and treatment that proved correct or useful were ignored or worse. James Herrick’s comprehensive synthesis of the pathophysiology, clinical features, and consequences of coronary thrombosis (acute MI) is now considered a classic contribution to cardiological knowledge.

When Herrick published his detailed review in the Journal of the American Medical Association in 1912, it had no significant impact on practice. More than anything, doctors needed an objective tool to help them recognize coronary thrombosis (Herrick’s term). He gave them just that when he first reported the typical electrocardiographic features of coronary thrombosis in 1919. The other lesson to be learned from Herrick’s classic review is that he (like Osler) did not sense any artificial boundary between where a review of the literature ends and medical history begins (9).

It often takes time to identify and acknowledge what turn out to be important innovations or observations. Sometimes, the early response to a medical or surgical innovation is not simply passive disinterest, it is an active attempt to discredit the observation or the observer. When German surgical resident Werner Forssmann published the first description of cardiac catheterization in a human (himself) in 1929, Ferdinand Sauerbruch, his chief of surgery and a leading academic of the time, ridiculed the technique and fired him. Eventually, in 1956, Forssmann shared the Nobel Prize for his contribution to the invention of cardiac catheterization with André Cournand and Dickinson Richards. Cournand is another cardiological pioneer who, despite an eponym and a Nobel Prize, has faded into obscurity.

Medical history provides many compelling examples of how the impact of opinion leaders can retard as well as accelerate medical “progress.” Their personal experience with a specific condition may be extensive, but this does not insulate them from false assumptions or unrecognized bias. Writing about MI in the 1951 edition of his widely read textbook, Paul White (10) explained, “As the result of experience during the last twenty five years, I have found that a very satisfactory plan of treatment for the average case of acute MI is one month of full [bed] rest . . . [followed by] one month of gradually increasing activity (the first week in a chair a little more each day, the second week walking on the level increasing distances, the third week going slowly over the stairs once a day, and the fourth week going out for short daily rides . . . and a third month if possible to consolidate the recovery.”

At the same time, Britain’s leading cardiologist, Paul Wood (11), wrote in his influential textbook, “Patients should be confined to bed at once and should remain for three to six weeks, or longer, according to the severity of the illness and to the behaviour of the sedimentation rate and the electrocardiogram.” Today, when our approach to treating acute MI could be characterized as hyperactive (and understandably so), the recommendations of two of the world’s most influential cardiologists a half-century ago seem incomprehensible. These opinion leaders based their advice on tradition, then-current pathophysiological theories, and their extensive personal experience.

Many readers will be surprised to learn that White and Wood made their recommendations before the first randomized clinical trial was published (on streptomycin therapy of tuberculosis) in 1952. In recent decades, evidence-based medicine has helped define effective therapy, especially in cardiology. Nevertheless, and understandably, we still read and hear strong statements from leading thinkers whose recommendations blend various levels of evidence with personal opinions that reflect many influences. The history of medicine demonstrates that dogmatic statements sometimes appear quite foolish in a few years or decades.

The history of coronary angiography provides a poignant example of resistance to innovation. Mason Sones Jr. published a concise description of his technique of selective coronary angiography in 1962. This procedure made it possible for the first time to visualize the entire coronary arterial system in living humans. It is hard to imagine cardiology and cardiac surgery today without this valuable technique that catalyzed thousands of careers and a multitude of industries. Although several cardiologists in academic centers and referral hospitals embraced the technique almost immediately, a few influential voices urged caution. Four years after Sones’s paper appeared, a writer editorialized in the Lancet (12), “Sufficient time has elapsed since the introduction of coronary arteriography for its usefulness to be assessed. As an aid to diagnosis in ischemic heart-disease, it seems at present to offer little that cannot be more easily obtained by much simpler methods, such as good history-taking and electrocardiography.”

George Burch, a prominent academic cardiologist who was editor of the American Heart Journal and a former president of the American College of Cardiology, harshly criticized selective coronary angiography more than a decade after its introduction. By then, the technique was widely accepted as the definitive tool for defining the location and severity of coronary obstructions. Nevertheless, Burch (13), known for his conservatism with respect to newer diagnostic methods, declared that coronary angiography “[i]s a hazardous and inadequate method for visualizing the coronary arteries, [that] is not nearly as effective in diagnosis and evaluation of ischemic heart disease as are a careful history, physical examination, electrocardiogram, and cardiac fluoroscopy.” Once again, this rather chilling quotation demonstrates the danger of dogmatic statements, especially if
they are based mainly on personal opinion that can be biased in many ways for a variety of reasons.

This brief essay contains just a few examples of how medical history provides a useful perspective for evaluating the present and speculating about the future. History teaches many valuable lessons that can inform our decisions and help predict the consequences of our actions. Other essays have discussed several additional reasons that cardiologists, in particular, will find the history of medicine entertaining as well as enlightening (14,15). There is a wealth of interesting historical material out there. I urge you to explore it. The National Library of Medicine has made it easy to get started. Visit their Web site (www.nlm.nih.gov) and click on MEDLINE/PubMed. There, click on “Limits” and select “History of Medicine” under “subsets.” The next steps are rather straightforward. By limiting the language to English and entering aortic stenosis, for example, 27 citations are returned. When you enter the world of medical history, you have embarked on an interesting journey through time. I think you will enjoy the trip and the broader perspective it provides.

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REFERENCES