Abraham Flexner and Medical Education

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ABSTRACT  The Flexner Report had its roots in the recognition in the mid-19th century that medical knowledge is not something fixed but something that grows and evolves. This new view of medical knowledge led to a recasting of the goal of medical education as that of instilling the proper techniques of acquiring and evaluating information rather than merely inculcating facts through rote memorization. Abraham Flexner, a brilliant educator, had the background to understand and popularize the meaning of this new view of education, and he took the unprecedented step of relating the developments in medical education to the ideas of John Dewey and the progressive education movement. Although the Flexner Report is typically viewed as a historical document—due to an understandable tendency to refer only to the second half of the report, where Flexner provides his famous critiques of the medical schools that existed at the time—this article argues that the Flexner Report is actually a living educational document of as much significance to medical educators today as in Flexner’s time. The article analyzes Flexner’s discussion of medical education and shows that his message—the importance of academic excellence, professional leadership, proper financial support, and service and altruism—is timeless, as applicable to the proper education of physicians today and tomorrow as in the past.

A CENTURY AFTER his landmark report Medical Education in the United States and Canada (1910), Abraham Flexner remains an icon in the history of American medical education. Working for the Carnegie Foundation for the Advancement of Teaching, he visited each of the 155 medical schools then in existence in the United States and Canada, after which he published a blistering,
This report helped bring about the destruction of the proprietary medical school, put forth the Johns Hopkins School of Medicine as the ideal of what a medical school should look like, and established Flexner as the unchallenged arbiter of educational reform in American medicine. Two years after the report, he became assistant secretary (later secretary) of John D. Rockefeller’s mammoth foundation, the General Education Board. In this capacity, he channeled tens of millions of dollars of Rockefeller money into medical schools willing to implement his vision of medical education, and he persuaded other philanthropists to support “deserving” medical schools as well. Thus he helped create a system that implemented his ideals and that even today is associated with his name.

Today, the Flexner Report is typically viewed as a historical document. Such a view results from the understandable tendency to refer only to the second half of the report, where Flexner provides his entertaining, caustic descriptions of the country’s medical schools, many of which deserved to go out of business. The first half of the report, however, provides a brilliant analysis of medical education that stands even now as the most notable theoretical discussion of medical education ever written. In this article I shall attempt to demonstrate that the Flexner Report is a living educational document of as much significance to medical educators today as in Flexner’s time. It insights and principles are timeless, as applicable to the proper education of physicians today and tomorrow as in the past.

Origins of the Flexner Report

There were two main roots of the Flexner Report. The first of these related to developments in American medical education that had been occurring since the middle of the 19th century. The second lay in qualities unique to Abraham Flexner, the man.

In the middle of the 19th century, a revolution in American medical education began. It was led by pioneering medical scientists who had studied in France and Germany where they experienced the birth of experimental medicine and, more important, acquired an understanding of scientific methodology and technique (Bonner 1963; Warner 1988). In the 1870s, Harvard Medical School, the University of Pennsylvania School of Medicine, and the University of Michigan Medical School extended their courses of study, added new scientific subjects to the curriculum, began requiring laboratory work of each student, and began promoting medical research. In 1893, the Johns Hopkins University School of Medicine opened, and immediately it became the standard by which all schools were judged. Johns Hopkins required a college degree (with specified scientific courses) for admission, implemented a four-year curriculum with nine-month terms, made the laboratory and the clinical clerkship the primary teaching devices, and hired a brilliant full-time medical faculty that was committed to scientific study, not just teaching. In the 1880s and 1890s, medical schools across
the country started to emulate these pioneers, and a vigorous campaign to reform American medical education began. By 1900, the university medical school had become the acknowledged ideal, and proprietary schools were closing because of the lack of applicants. Substantial work remained to be done to create a new system of medical education, but the process was well underway (Ludmerer 1985).

At the heart of this movement lay a revolution in ideas concerning the purpose and methods of medical education. Medical educators of the middle and latter 19th century were the first physicians in history to feel the real shock of the information explosion in medical science. By the 1870s, an enormous increase in medical information was radically transforming medical thought and practice, and the amount of medical literature began to become overwhelming. Even more important was an insight of revolutionary proportions: the recognition that medical knowledge is not something fixed but something that grows and evolves. This realization that knowledge is not fixed conjured up images of a barely tapped pool of ideas that might take years, decades, or even centuries to understand and that invalidated the traditional catechetical view of knowledge.

To pioneering medical educators after the Civil War, there was only one viable response to the challenge imposed by the proliferation of medical knowledge: to recast medical education so that it should have a procedural rather than a substantive emphasis. The aim of medical education had to be that of instilling proper techniques of acquiring and evaluating information, rather than merely inculcating facts through rote memorization. The new objective of medical education became that of producing problem solvers and critical thinkers who knew how to discover and evaluate information for themselves. To achieve this goal, medical educators de-emphasized traditional didactic teaching methods—lectures and textbooks—and began speaking of the importance of self-education and learning by doing. Through laboratories and clinical clerkships, students were to be active participants in their learning, rather than passive observers. A generation before John Dewey, medical educators were espousing the ideas of what later came to be called “progressive education.”

If anyone was capable of understanding the transformations in medical education, or of expanding and generalizing on their significance, that person was Abraham Flexner. Born in 1866 to impoverished Jewish immigrants, Flexner overcame humble origins and economic deprivation to become one of the most informed critics ever of the American educational system. He received the A.B. degree from Johns Hopkins in 1886 after studying classics, and thereupon he returned to Louisville to organize a private high school. In 1905, he closed his school to pursue graduate work at Harvard, where he studied philosophy and psychology for their possible bearings on educational problems. In 1907 he traveled in Europe, where he closely observed the various educational systems. On returning to the United States, he served as a staff member of the Carnegie Foundation (1908–12) and as assistant secretary and then secretary of the
General Education Board (1913–28). In his “retirement,” he organized the Institute for Advanced Study at Princeton, served as its first director, and brought Albert Einstein to the United States (Bonner 2002).

How Flexner, at the time an obscure educator, came to the attention of Henry Pritchett, the president of the Carnegie Foundation, is not known. In his autobiography, Flexner (1940) thought that perhaps Pritchett had learned of him through his first book, *The American College*, which appeared in 1908 and was a criticism of the lecture and elective system. It is possible that Flexner’s brother, Simon, the director of the Rockefeller Institute for Medical Research and a former student of the Johns Hopkins pathologist and dean, William Welch, played a role. In any event, the choice proved to be a wise one.

As Flexner began the project in December 1908, he knew little about medicine. Indeed, in his autobiography, Flexner recalled that at first he had thought that Pritchett had confused him with his brother, Simon. After accepting the assignment, Flexner immediately undertook a crash course on medical education. He read voraciously on the subject, he conferred regularly with the Council on Medical Education of the American Medical Association, and he made many trips to Johns Hopkins. His greatest debt was to Welch and the other faculty members who had created the country’s premier medical school. He later recalled, “The rest of my study of medical education was little more than an amplification of what I had learned during my initial visit to Baltimore” (Flexner 1934).

However, it would be a serious mistake to regard Flexner as a mere tool of the Council on Medical Education or of the Johns Hopkins medical faculty. Flexner later portrayed himself as an “unfettered lay mind” (1940, p. 111), and this depiction was accurate. A sophisticated and unimpressionable educator, Flexner had already developed a coherent philosophy of education prior to embarking on the study of medical education. Though at first he knew little about the specifics of medical training, he understood the medical educators when they talked about the experiential nature of learning and the imperative of developing inductive reasoning and the power to generalize. These ideas Flexner had acquired as a young man in his private school in Louisville and later in his formal study of education at Harvard (Bonner 2002). Flexner’s conceptual framework, in short, had already been developed. Welch and the others merely provided the details as they pertained to medicine.

Similarly, Flexner did not need the medical educators to persuade him of the importance of original research at a medical school. Rather, it was Daniel Coit Gilman, the first president of the Johns Hopkins University, who had imparted to Flexner an appreciation of the importance of original investigation in all scholarly fields. “Those who know something of my work,” he later recalled, “will recognize Gilman’s influence in all I have done or tried to do” (1940, p. 52). As the Johns Hopkins faculty described the different types of medical schools to him, Flexner needed no convincing to endorse the university model. This was the only model that satisfied his high standards of academic excellence.
With his preparation complete, Flexner began a busy year of travel to each of the 155 medical schools in the United States and Canada. Although he had been coached by the Johns Hopkins faculty and the Council on Medical Education, and Council members accompanied him on each of his visits, the report was his and his alone, for it reflected the educational philosophy and academic ideals he had brought with him into the study. Perhaps no other person could have written such a document.

Medical Education in the United States and Canada

The starting point in Flexner’s educational analysis was the observation that medicine had become an experimental science governed by the laws of general biology. “Medicine is part and parcel of modern science,” he wrote. “The human body belongs to the animal world. It is put together of tissues and organs, in their structure, origin and development not essentially unlike what the biologist is otherwise familiar with; it grows, reproduces itself, decays, according to general laws” (1910, p. 53).

The term “scientific medicine” meant two things to Flexner. The first was that medical observations could be explained in physical, chemical, and biological terms. He did not minimize the huge depth of the “unbridged gap” between the physical and medical sciences, but he felt that the mechanical standpoint had already “richly justified itself” from the medical point of view (p. 62). Physical laws, not metaphysical principles, explained the normal and abnormal workings of the human organism. Medical students must be “trained to regard the body as an infinitely complex machine” (p. 63).

But the second and more important meaning of “scientific medicine” to Flexner was the fact that the scientific method of analysis applied to medical practice as well as research. By “scientific method,” he meant the testing of ideas by well-planned experiments in which accurate facts were carefully obtained. The scientific character of an activity, he explained, “depends not on where or by what means facts are procured, but altogether on the degree of caution and thoroughness with which observations are made, inferences drawn, and results heeded” (p. 92). Thus, research and practice, when conducted properly, both employed the same mental processes. He described this in an important passage:

And just as it makes no difference to science whether usable data be obtained from a slide beneath a microscope or from a sick man stretched out on a cot, so the precise nature of the act or experiment is immaterial: it matters not in the slightest, from the standpoint of scientific logic, whether the step take the form of administering a dose of calomel, operating for appendicitis, or stimulating a particular convolution of a frog’s brain with an electric current. The logical position is in all three cases identical. In each a supposition,—whether expressed or implied, whether called theory or diagnosis,—based on supposedly adequate
observation, submits itself to the test of an experiment. If proper weight has been
given to connect and sufficient facts, the experiment wins; otherwise not, and a
second effort, profiting by previous failure, is demanded. The practicing physician
and the “theoretical” scientist are thus engaged in doing the same sort of thing,
even while one is seeking to connect Mr. Smith’s digestive aberration and the
other to localize the cerebral functions of the frog. (p. 92)

Accordingly, Flexner abhorred the “rule-of-thumb” practitioner—the simple
empiric who practiced medicine by protocol. He admired the “scientific” prac-
titioner—the one who evaluated patients carefully, who performed tests only
when they were dictated by a patient’s particular circumstances, who modified
his preliminary impressions on the basis of test results or the response to therapy,
who realized the limits of his knowledge, and who had the capacity to keep up
with changing medical practices. Flexner’s point was not that the average family
doctor should engage in research. Rather, his point was that the scientific
method of thinking was indispensable to the everyday work of good patient care.

To Flexner, the scientific nature of modern medicine imposed new require-
ments on students. “On the pedagogic side,” he wrote, “modern medicine, like
all scientific teaching, is characterized by activity. The student no longer merely
watches, listens, memorizes; he does” (p. 53). This meant that students should
learn through their experiences in laboratories and hospital wards. Passive,
descriptive learning through lectures or textbooks could provide “no substitute
for tactile and visual experience” (p. 62): “A modern medical education involves
both learning and learning how; the student cannot effectively know, unless he
knows how” (p. 53). Flexner’s scorn for didactic instruction pervaded the report.

“Learning by doing” fulfilled a dual purpose to Flexner. It represented the
best way of mastering scientific knowledge, and it taught the student the scien-
tific method. This latter point was crucial to Flexner, because a medical student
had to understand scientific concepts, not merely memorize facts by rote. The
student must be a “thinker,” not a “parrot” (p. 55). This could be realized only if
the student had mastered the scientific method—that is, the ability to handle ex-
perience critically.

To Flexner, “scientific medicine” also imposed new responsibilities on faculty:
modern medical teachers needed to engage in research so that its critical method
might animate their teaching. Modern practitioners must be “alert, systematic,
through, critically open-minded” (p. 56). They would receive no such training
from “perfunctory teachers,” but only from “men of active, progressive temper”
who are engaged in research (p. 56): “Only research will keep the teachers in
condition. A non–productive school, conceivably up to date to–day, would be out
of date to–morrow; its dead atmosphere would soon breed a careless and unen-
lighted dogmatism” (p. 56). Flexner did not feel that every medical instructor
had to be a productive researcher, but, as a general rule, he did believe that re-
searchers made the best teachers. Thus, he believed that every medical school
required a large staff of full-time professors and that the school had to be part of
a vigorous university.

How should a proper system of medical schools be achieved? Flexner recom-
mended a drastic reduction of the number of schools in the United States and
Canada to 31. Only a few should be retained; the vast majority should be elim-
inated, either through extermination or consolidation into stronger units. All
surviving schools would be of one type: university schools committed to med-
cial research and academic excellence. Surviving schools would be made strong
by public and private contributions, which would provide the financial, physical,
and clinical resources necessary to achieving educational excellence. The instru-
ments of reform would be the state boards, which would have the legal power
to destroy any school that did not meet the highest standard of excellence.

Conceptually, Flexner’s discussion of proper medical teaching contained no
new ideas. However, he did what no medical educator had done before: he re-
lated the discussion of medical education to the contemporary discussion of
public education. Flexner, who had studied philosophy and psychology for their
relevance to educational matters, had become familiar with the work of John
Dewey. He recognized that both Dewey and the medical educators were advo-
cating the same approach to education: learning by doing. In addition, in empha-
sizing that the essence of science was its method of inquiry, Flexner invoked the
authority of Dewey. Quoting from one of Dewey’s papers, Flexner observed that
“Science has been taught too much as an accumulation of ready-made material,
with which students are to be made familiar, not enough as a method of think-
ing, an attitude of mind, after the pattern of which mental habits are to be trans-
formed” (p. 68). Flexner thus symbolized the unity in educational viewpoints of
the academic physicians and John Dewey. He realized that progressive education
involved concepts that were generalizable to education at all levels.

Relevance to the Present

Contrary to a widespread myth, the Flexner Report was not envisioned by its
author as a final document. Rather, his proposals were designed only to meet the
problems immediately at hand. Flexner was an early advocate of “continuous
quality improvement.” He recognized that medical education would need to
change as scientific and social circumstances changed. “This solution,” he wrote,
“deals only with the present and the near future—a generation, at most. In the
course of the next thirty years needs will develop of which we here take no ac-
count. As we cannot foretell them, we shall not endeavor to meet them” (p. 143).

Though Flexner knew that the specifics of medical education must continu-
ously evolve, his report also contained four timeless principles as central to
achieving educational quality today or tomorrow as in Flexner’s time. The first
of these was that medical education should adhere to the highest academic stan-
dards. Consider his recommendations: well-prepared students receiving rigorous
instruction at the highest scholarly level; learning that comes from the laboratory and the clerkship; an educational emphasis on biological understanding, analytic skill, and problem-solving capacity rather than rote memorization; and mastery of the scientific method of reasoning by all students. Flexner, in short, was the champion of excellence and the archenemy of mediocrity. His credo appeared in his autobiography: “We have to defend the country against mediocrity, mediocrity of soul, mediocrity of ideas, mediocrity of action. We must also fight it in ourselves” (1940, p. 75). Today, even as he would encourage the evolution of the curriculum and teaching methods, he would undoubtedly warn not to let standards fall. He would remind us that our job is to produce medical professionals, not medical workers, and that the responsibility of the medical school is to provide a university education, not job training.

Second, Flexner acknowledged that the movement toward the university medical school was underway long before he began his work. Indeed, the Johns Hopkins School of Medicine served as his model. Stated another way, leadership for development of the modern medical school came from visionary, committed professional leaders within medicine. Flexner merely served as a midwife for their work. As we contemplate our current dilemmas in medical education, it is often said that “we need another Flexner Report.” In actuality, it would be more accurate to say that “we need another Johns Hopkins.” Excellence in medical education cannot be externally imposed; it must arise from the ideas, vision, and leadership of individuals within the profession.

Third, as medical education needs ideas and professional leaders, it also needs money, facilities, and material resources. Flexner emphasized this point throughout the report, and later in his career he became a great fund-raiser for medical education. These are points worth remembering today. At its core, medical education, with its emphasis on close relations between students and faculty, its presence in an environment in which problems are being solved, its need for student and faculty laboratories, and the requirement for a strong teaching hospital, library, and information system, quality medical education remains an expensive proposition. Strong financial support of the enterprise will always be required.

Fourth, throughout the report Flexner emphasized that medical schools were public trusts that placed the public’s interest before their own. Medical schools, he maintained, were public service corporations to be run for the benefit of society, not private businesses to be operated for the profit of the faculty. Medicine has “no analogy with business. Like the army, the police, or the social worker, the medical profession is supported for a benign, not a selfish, for a protective, not an exploiting, purpose” (Flexner 1910, p. 173). Many contemporary dilemmas in medical education can be traced to the fact that medical educators have sometimes forgotten that we exist to serve (Ludmerer 1999).

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1I am indebted to Dr. David Hellmann of the Johns Hopkins School of Medicine for this insight.
These, then, are the lasting messages of the Flexner Report for posterity: academic excellence, professional leadership, proper financial support, and service. These principles are as important to fulfilling our mission in medical education today as they were in Flexner’s time, and they will be equally indispensable to anyone seeking to maximize the quality of medical education in the future.

References