Commentary: **Understanding the Flexner Report**

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Abstract

In this commentary, the author discusses medical education reform before Abraham Flexner's 1910 report, *Medical Education in the United States and Canada*, the reforms for which Flexner campaigned, and the report's impact on the future of the discipline. To honor Flexner's contributions to medical education, the author then exposes the myths that surround Flexner's ideals and accomplishments 100 years later. The author argues that Flexner's achievement lies in how he transformed medical education reform into a broad social movement, aligning it with John Dewey's popular "progressive education" movement, and in how Flexner succeeded in establishing the university model as the standard for all medical schools. The author also argues that Flexner, at the most fundamental level, stood for academic excellence and public service in medical education. This dedication, the author argues, is Flexner's greatest legacy and a commitment that should continue to shape the future of the discipline.

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No individual has been more closely identified with American medical education than Abraham Flexner. In 1910, he wrote *Medical Education in the United States and Canada*,[1] the famous muckraking report for the Carnegie Foundation for the Advancement of Teaching. This report put forth the Johns Hopkins University School of Medicine as the ideal of what a medical school should look like. After publication of the report, Flexner became the unchallenged arbiter of educational reform in America and helped create a system that even today is associated with his name.

Yet for nearly a century, Flexner has been misunderstood. Regularly, he is both credited and blamed for things he did not do, and some of his greatest contributions remain unappreciated. This commentary will shatter the mythology surrounding the man and describe what his accomplishments in fact were. In my view, Flexner's role as the most prominent medical educator America has ever produced remains secure. However, his memory will be honored more fully by an accurate understanding of his ideals and accomplishments.

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American Medical Education Prior to the Flexner Report

In the mid-19th century, the notorious proprietary school model reigned as the dominant vehicle for medical instruction in America.[2] The typical medical school was owned by a small faculty of 8 or 10 who operated the institution for profit and measured its success with financial results, hence the term "proprietary school." Entrance requirements were nonexistent, and the courses taught were superficial and brief. The typical path to a medical degree consisted of two 16-week sets of lectures, the second term identical to the first term. Instruction was almost wholly didactic, including lectures, textbook readings, and enforced memorization of the innumerable facts. Laboratory and clinical work were not to be found. The schools were not affiliated with universities nor were the faculty involved in research activity.

Yet in the mid-19th century, a revolution in American medical education was already under way. This revolution began amid the birth of experimental medicine in Europe and the migration of American medical graduates to France[3] and Germany[4] to acquire the latest scientific knowledge and, more important, an understanding of scientific methodology and technique. In the 1870s, the first lasting reform occurred as Harvard Medical School, the University of Pennsylvania School of Medicine, and the University of Michigan Medical School extended their course of study to three years, added new scientific subjects to the curriculum, required laboratory work of each student, and began hiring full-time medical scientists to the faculty. In 1893, the Johns Hopkins University School of Medicine opened, immediately becoming the model by which all other medical schools were measured. There, a college degree was required for admission, a four-year curriculum with nine-month terms was adopted, classes were small, students were frequently tested, the laboratory and the clerkship were the primary teaching devices, and a brilliant medical faculty made medical research as well as medical teaching part of its mission. 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 the turn of the century, the university medical school had become the acknowledged ideal, and proprietary schools were already closing because of the lack of applicants.

At the heart of the transformation of American medical education was a revolution in ideas concerning the purpose and methods of medical education. After the Civil War, medical educators began rejecting the traditional notion that medical education should inculcate 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 deemphasized 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."

Learning by doing greatly increased the demands on medical schools, for the new teaching methods were extremely costly to implement. Thus, this intellectual revolution gave rise to an institutional revolution. The proprietary medical school model was abandoned, and the university medical school standard was created. Funds were raised, new laboratories and facilities were built, clinical facilities were acquired, and full-time faculty members interested in research were hired. Medical schools, which had existed as autonomous institutions during the proprietary era, began to establish close affiliations with universities and hospitals.

In the early 1900s, however, much work remained to be done. The chief problem was that medical schools lacked the funds and clinical facilities to implement fully their new ideas of how to teach medicine. For lack of resources, desired reforms often went undone. It was unclear whether further development would continue along the same gradual, evolutionary path that had been occurring since the middle of the previous century or whether more radical, dramatic changes were to come. It was also unclear what form the institutional structure of American medical education would ultimately assume. Should there be one uniform standard of excellence for all schools, or would it be acceptable to have different "tiers" of medical schools, each with its own mission and standards? Should research be conducted at all schools, or should there be a group of "practical" schools that concentrated on good teaching rather than investigation? Must all schools be university affiliated, or could a school of independent status still function effectively? There were a variety of fiercely competing models of how best to conduct medical education, each of which had responsible advocates. This was the setting for the Flexner Report.

The Flexner Report

How Flexner came to the attention of the Carnegie Foundation for the Advancement of Teaching is not known. Flexner himself was surprised by the request, thinking perhaps that Henry Pritchett, president of the Carnegie Foundation, had confused him with his younger brother Simon, director of the Rockefeller Institute for Medical Research. Pritchett possibly learned of Abraham Flexner through his first book, *The American College*, which appeared in 1908 and was a criticism of the lecture and elective system of American universities. Flexner, theretofore an obscure educator and former headmaster of a private high school in Louisville, became a powerful spokesperson for modern methods of medical teaching and a very loyal friend to academic medicine.

It is well known that during his investigation, Flexner was coached by his brother Simon, William Welch of Johns Hopkins, and members of the American Medical Association's Council on Medical Education. However, it is not well known that Flexner had already developed a sophisticated educational philosophy that emphasized the importance of experiential learning ("learning by doing") at every level of study. It is also not well known that Flexner began his study with the conviction that universities and professional schools had the duty to promote original investigation, not merely to teach. Flexner had developed these ideas from his experiences as a college student at the Johns Hopkins University, where he was profoundly influenced by Daniel Coit Gilman, the first president of the university, and by his study of educational theory.[5,6] Thus, Flexner's conceptual framework had already been developed before joining the Carnegie Foundation. Welch and the others merely provided the details as they pertained to medicine.

After visiting each of the 155 medical schools in the United States and Canada, Flexner prepared his report. The resulting document published in 1910 is regularly cited for its caustically entertaining descriptions of the weaker medical schools, particularly those proprietary schools that had not yet closed. However, the lasting significance of the report lies in Flexner's discussions of the principles of modern medical education. This part of the report remains the most notable theoretical discussion of medical education ever written.

Flexner's views on medical education

A detailed analysis of the full report has been provided elsewhere.[2] However, it is important here to summarize the main components of Flexner's educational views.

Medical positivism. Flexner described medicine as an experimental discipline governed by the laws of general biology. "It [the human body] 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."[1(p53)]

Rigorous entrance requirements. Since the preclinical courses of medical school were sciences "at the second, not the primary, stage,"[1(p24)] medical schools needed to establish and enforce entrance requirements. At minimum, these should consist of two years of college with preparation in biology, chemistry, and physics. A medical school, Flexner wrote, "cannot provide laboratory and bedside instruction on the one hand, and admit crude, untrained boys on the other."[1(p22)]

The scientific method. Flexner pointed out that the scientific method of thinking applied to medical practice. By scientific method, he meant the testing of ideas by well-planned experiments in which accurate facts were carefully obtained. The clinician's diagnosis was equivalent to the scientist's hypothesis; both diagnosis and hypothesis needed to be submitted to the test of an experiment. "The practicing physician and the 'theoretical' scientists are thus engaged in doing the same sort of thing, even while one is seeking to correct Mr. Smith's digestive aberration and the other to localize the cerebral functions of the frog."[1(p92)] Flexner argued that mastery of the scientific method of problem solving was the key for physicians to manage medical uncertainty and to practice in the most cost-effective way.

Learning by doing. There was but one reliable way for students to learn both medical facts and the scientific method of thinking—to spend most of their time in the laboratory and clinic rather than in the amphitheater. "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."[1(p53)] Flexner's scorn for didactic instruction pervaded the report.

Original research. Original research was a core activity at Flexner's model medical school. "Research, untrammeled by near reference to practical ends, will go on in every properly organized medical school; its critical method will dominate all teaching whatsoever."[1(p59)] Flexner saw research as critical, not only for the new knowledge that would be produced but also for the stimulation, excitement, and critical rigor that research would bring to teaching. To Flexner, the best teachers were usually "men of active, progressive temper" engaged in research; those uninterested in solving problems tended to be "perfunctory teachers."[1(p56)] Thus, his ideal medical school had to be part of a vigorous university with a large staff of full-time professors, in the clinical as well as scientific departments.

How to develop the proper system of medical schools

Flexner recommended a drastic reduction in the number of schools in the United States and Canada from 155 to 31. Only a few schools should be retained; the vast majority should be eliminated, either through extermination or consolidation into stronger units. All surviving schools would be of one type—university schools committed to medical research and academic excellence.

Flexner recognized that medical schools could be first-rate only if they were well funded. Accordingly, the subject of obtaining strong financial support and modern laboratories and hospital facilities received detailed and impassioned discussion in his report. He also defined medical schools as public trusts—that is, as public service corporations to be run for the benefit of society, not private businesses to be operated for the profit of their stockholders. What made the commercial schools so despicable to him was that they placed their owners' interests above the interests of the public. Flexner's indignation and moral outrage, coupled with his sensational journalistic style, made the report an elegant example of Progressive Era muckraking journalism.

Significance of the Flexner Report

Conceptually, the Flexner Report said nothing new about how physicians should be trained. Everything in it had been said by academically inclined medical educators since the 1870s. However, the report brought concerns about medical education to general attention that previously had been voiced only within the medical profession. It transformed the profession's effort to reform medical education into a broad social movement similar to other reform movements of Progressive Era America. There is little doubt that the extraordinary development of medical education that occurred in the years immediately following the report would have occurred without this catalyst.

Though Flexner's discussion contained no new educational ideas, he did what no medical educator had done before—he related the discussion of medical education to the 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, the famous educational philosopher. He understood that Dewey was advocating the same approach to elementary teaching as medical educators were promoting for medical teaching. As Flexner described the modern principles of medical learning, he cited Dewey as his ultimate authority. Flexner thus demonstrated the unity in viewpoint between medical educators and John Dewey. He realized that progressive education involved concepts that were generalizable to all educational levels.[2]

The greatest significance of the Flexner Report was its impact on shaping the medical school as an institution. Flexner espoused a model system of medical education in which all schools were to be of the same kind—university-based, research-oriented schools patterned after the Johns Hopkins University School of Medicine. Only the most uncompromisingly academic model for a medical school was acceptable to him. There was no room in his system for "practical," non-research-based schools, even if they happened to provide respectable teaching. This is precisely the system that was ultimately created, and medical schools soon became much more homogeneous than before. Herein lies Flexner's most important influence on the subsequent course of medical education in the country.

Two years after the report, Flexner's newfound fame catapulted him into the position of assistant secretary, and 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 in an attempt to implement his vision of medical education, and he persuaded other philanthropists to support medical education as well. In his report, Flexner described in great detail the financial needs of scientific medical schools. He spent much of the rest of his life helping to solve the problem of funding this new, expensive system of medical education, becoming academic medicine's greatest fund-raiser.

Dispelling Myths About the Flexner Report

Myths concerning Abraham Flexner abound. The most common myth is that little or nothing had happened in American medical education until Flexner arrived on the scene. According to this myth, Flexner, in one swoop, pulled antiquated medical schools, kicking and screaming in resistance, into the 20th century. Ironically, scholars for over a generation have been trying to dispel this myth. They have pointed out that the Flexner Report represented a point along a continuum of development and that the report had been preceded for years by considerable strengthening of the schools.[2] Nevertheless, the myth has persisted. Physicians, educators, medical school administrators, university officials, foundation officers, and others continue to popularize the fiction that little had transpired in medical education until Flexner, in one stunning blow, modernized an anachronistic system. This myth deserves, once and for all, to be dispelled.

The report itself has frequently been misunderstood. Because of its strong emphasis on scientific medicine, it has often been accused of ignoring the doctor–patient relationship and the humane aspects of medical care. Exactly the opposite was the case. Science, Flexner wrote, was "inadequate" to provide the basis of professional practice.

The practitioner needs "insight and sympathy," and here specific preparation is "much more difficult."[1(p26)] In later years, Flexner felt that the medical course had become overwhelmed with science to the exclusion of the humanistic aspect of medicine, and he seemed frustrated that such a system of medical education had come to be identified with his name. He wrote in 1925, "Scientific medicine in America—young, vigorous and positivistic—is today sadly deficient in cultural and philosophical background."[7(p18)]

Another common misperception is that the report denigrates the importance of preventive medicine. According to Flexner, doctors must remember that "directly or indirectly, disease has been found to depend largely on unpropitious environment." These conditions—"a bad water supply, defective drainage, impure food, unfavorable occupational surroundings"—are matters for "social regulation," and doctors have the duty "to promote social conditions that conduce to physical well-being."[1(pp67–68)] Flexner maintained that "the physician's function is fast becoming social and preventive, rather than individual and curative."[1(p26)]

Many have faulted the Flexner Report for fostering a crowded, inflexible curriculum. Here again, the criticisms have resulted from a misunderstanding of what Flexner actually wrote. In discussing the medical school curriculum, Flexner decried the "absurd overcrowding" produced by 4,000 hours of prescribed work. He warned medical educators against too much rigidity. Medical schools, he argued, must be trusted "with a certain amount of discretion."[1(p76)] He believed that "the endeavor to improve medical education through iron-clad prescription of curriculum or hours is a wholly mistaken effort."[1(p76)]

Contrary to widespread popular opinion, the Flexner Report was not envisioned by its author as a final document. "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 account. As we cannot foretell them, we shall not endeavor to meet them."[1(p143)] The report thus contained much more flexibility than commonly supposed. It recognized that academic medical centers would need to change as the demands on them changed. Flexner's specific proposals were designed only to address the problems immediately at hand.

Flexner's Legacy

It is impossible to deduce from the report or his other writings what Flexner would say about the opportunities and challenges in medical education today. Too much has changed. His focus was undergraduate medical education and the education of general practitioners. Today, trainees spend more time in residency and fellowship programs than in medical school, and specialization has proceeded to a degree that would have flabbergasted him. Flexner constructed an educational solution to address the problems posed by acute diseases. Today's challenges result predominantly from chronic diseases. Flexner could not have foreseen the strains that would develop between teaching and research, the enormous growth of academic medical centers following World War II, the more recent expansion of the "clinical enterprise" at medical schools (and with it the blurring of traditional distinctions between academic medicine and private practice), the emergence of the computer and Internet, and cultural changes that promote shorter work hours and less independence for trainees. Nor was Flexner concerned about health care delivery. In all his writings, he never wrote a single word on the subject. He undoubtedly would be dumbfounded by the possibility of an implosion of the health care delivery system, even as the power and sophistication of medical practice have reached unprecedented heights.

Yet it is certain that Flexner would be at the vanguard of efforts to reform medical education today. As he discussed in his report, medical education is destined to change. He charged each generation of medical educators with the task of adapting medical education to evolving scientific, professional, and cultural circumstances. To Flexner, no educational idea should ever be considered off limits for review, no educational strategy or approach too sacrosanct to revise or discard. He undoubtedly would be disappointed to find so many of his specific recommendations still current a century later, even though today's physicians face scientific and social conditions far different from those of his own generation.

Flexner would also counsel caution in how we go about reforming medical education. He would consider any change justifiable, as long as it fostered excellence and served the public interest. He championed the highest possible academic standards; he detested mediocrity. He was uncompromising in his view that medicine is a public trust and that the profession and its educational system exist to serve. These values, he argued, are timeless, regardless of the professional and social circumstances of the moment. By and large, medical educators since his time have taken this message to heart. We certainly have done our best work in pursuit of this goal. An unswerving commitment to excellence and service—this was and continues to be Flexner's gift to medical education and the medical profession.

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