

# The Schism Between Medical and Public Health Education: A Historical Perspective

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## Abstract

The separation of “medicine” and “public health” in academic institutions limits the potential synergies that an integrated educational model could offer. The roots of this separation are deeply imbedded in history. During the past two centuries, there have been repeated efforts to integrate public health education into the core training of physicians, usually in response to a perceived short-term crisis, and without widespread, lasting success. The cost of additional public health instruction and the “overcrowding” of the medical curriculum have been cited as obstacles

for creating an integrated medical/public health curriculum for more than a century. Several thoughtful and prescient proposals for integration were developed at a conference convened by the Rockefeller Foundation in the early 20th century, but not all were implemented. Today, there is growing recognition of the considerable value afforded by the integration of medicine and public health education. Many schools have responded to a national call for a renewed relationship between medicine and public health by increasing the availability of MD/MPH programs and/or by

incorporating one or more public health courses into the basic medical curriculum. A few schools have created more substantial and innovative changes. Review and consideration of the history and politics of past efforts may serve as a guide for the development of successful new approaches to creating a clinical workforce that incorporates the principles of both clinical medicine and public health.

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**T**here is a growing recognition of the limitations created by the separation of “medicine” and “public health” in academic institutions. Although medical schools have increased instruction in clinical prevention, they have not, for the most part, expanded the presence of traditional community-based public health in the curriculum.<sup>1–4</sup> The academic missions of education and research would be better served if health promotion and disease prevention were more fully integrated with disease diagnosis and treatment. Ultimately, such an integrated model could yield more effective approaches to elevating the health status of both individuals and populations.

There are many complex reasons why medicine and public health, and the academic institutions that train health professionals and advance knowledge

through research, are currently separated. For example, medical schools and their affiliated teaching hospitals and group practices rely heavily on reimbursement for clinical care, and current health care reimbursement policies are aligned more with clinical medicine than with prevention or population-based interventions. Yet, public health and medicine must work together in an integrated model if we are to train the best possible health workforce, develop innovative tools and approaches through the discovery process, and ultimately achieve the maximum potential in improving health.

We believe it is helpful to look beyond the current environment and explore the historical roots of the divergence of medicine and public health if we are to create an approach for uniting their approaches and disciplines. To turn around the well-known observation of historian George Santayana, “Those who succeed in learning the lessons of history may avoid repeating them . . . and may instead advance forward.” A better understanding of *why* medicine and public health came to be separate disciplines in the past will inform the discussion of their future relationship. Below, we discuss key developments in the relationship between public health and medical education in this country

since the turn of the 20th century, including recent developments and innovations.

## Public Health and Medical Education in Historical Perspective

Public health courses were not typically part of medical school curricula in the 19th century. After the Civil War, many physicians, along with the American Medical Association (AMA), supported the inclusion of public health topics in medical education, but, by the turn of the 20th century, this had not resulted in substantial structural changes in medical college curricula. For example, in 1901, only three schools required laboratory work as a part of their hygiene course, and many schools did not even examine students on public health material. This led the Committee on the Teaching of Hygiene of the American Public Health Association (APHA) to suggest “that practical training in the field be compulsory for all medical students: its object would be to enable doctors to cooperate intelligently with health boards and to carry out the hygienic work in their own practices.”<sup>5</sup> However, the cost of such instruction and the “crowding” of medical school curricula proved to be significant barriers to the establishment of such programs. After more than a

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century of attempts to better integrate public health into medical education, many of the same concerns remain today.<sup>6</sup> A closer analysis of the history of these attempts may place the current debates into perspective and inform the development of 21st-century health policy and education.

In 1904, the newly invigorated AMA created its Council on Medical Education, which established two sets of standards for medical schools—one stipulating minimum admission requirements, the other defining the medical curriculum.<sup>5,7</sup> The latter required two years of training in anatomy and physiology followed by two years of clinical instruction. Public health topics were noticeably absent from the requirements. Further attempts to reform medical education were catalyzed by Abraham Flexner's *Medical Education in the United States and Canada*, a scathing appraisal of the state of medical education in North America.<sup>8</sup> The so-called "Flexner Report" urged reforms that led to admission standards, the four-year curriculum, internship and residency programs, and the accreditation process. In addition, many medical schools merged or closed outright, drastically reducing the number of schools in the United States, and thus also reducing the number of doctors produced.<sup>7,9,10</sup>

In the midst of this widespread reform, many medical schools began to offer postgraduate courses designed to train public health specialists. The first was the University of Pennsylvania in 1909, followed closely by Harvard in 1910, and the Universities of Michigan and Wisconsin in 1911, but most did not increase the teaching of public health topics in the basic medical school curriculum. Despite this disconnect, physicians began to represent a larger fraction of the membership on public health boards. In 1912, for example, 15 states mandated that all members of their boards of health be physicians and 23 states required at least one member to be a physician, whereas only 10 states had no professional requirement for service.<sup>11</sup> Sanitary engineers, nurses, extension workers, and other nonphysicians once heavily involved in public health practice became an increasingly smaller presence on state boards of health,

while the predominance of physicians grew.

This trend fundamentally deterred the integration of medicine and public health. As physicians became the dominant professional group in the public health field, they increasingly defined public health in biomedical terms. Most of the traditional, nonmedical aspects of public health practice, such as municipal sanitation or housing inspection, became the purview of separate boards. Ironically, many of the medical aspects, such as mass vaccination or diagnostic services, provoked criticism from practicing physicians who claimed they interfered with the patient–physician relationship and saw them as a source of financial competition.<sup>12</sup> This created a further separation between medicine and public health based less on profession or expertise than on prerogative, revealing an already existent antagonism between private medical practice and public health.

Further deepening the schism between public health and medical education, institutions began to establish certifications in public health separate from the medical degree. The first certificates in public health were granted in 1914 by the School for Health Officers of Harvard University and the Massachusetts Institute of Technology (MIT), which also offered the DrPH degree. To earn this postgraduate certificate, students took courses on "preventive medicine and sanitary science, personal hygiene, public health administration, sanitary biology, sanitary chemistry, special pathology, communicable diseases, sanitary engineering, and demography" as well as "special courses and lectures in infant mortality, social service work, mental hygiene, oral prophylaxis, the prevention of ear, nose and throat disease, hygiene of the eyes, industrial hygiene and medicine, eugenics, genetics, and sanitary law."<sup>13</sup> The school was not created as a department in a medical college but, instead, was developed as an independent program that drew faculty from several departments at both universities. This established public health education as programatically and administratively separate from medical education, leading others from fields outside of medicine to examine the question of how to educate future generations of public health workers.

In October 1914, the Rockefeller Foundation convened a meeting in New York City attended by foundation representatives and prominent public health leaders. The conference attendees attempted to define what knowledge was essential for public health practice and to design an educational system that would ensure the propagation of this public health training. Three main models of public health education were proposed: William Welch advocated the establishment of public health departments in medical schools, Milton J. Rosenau pictured independent schools of public health at existing universities, and Hermann M. Biggs wanted a system of public health training unaffiliated with existing institutions. At the end of the conference, Wickliffe Rose proposed a fourth possibility: a national school of public health, focusing on research and advanced education, which in turn would support a network of state extension schools. The national school would provide the leaders and the extension schools the workers.<sup>12,14</sup> This idea was widely lauded by the other attendees, and Rose agreed to write up a detailed proposal, with the help of Welch, to be presented the following year.

Ultimately, there were two different versions of the proposal. Rose's emphasized epidemiology, public health nursing, and administration, with the implementation of a hierarchical, disseminated, door-to-door approach to public health. Welch's emphasized research more than teaching, and science more than practice; the school's main purpose would be to promote and advance the science of hygiene rather than fulfilling the current needs of public health services.<sup>14</sup> The members of the conference, however, saw only Welch's version (which Rose had signed without reading). They accepted the proposal and appointed Abraham Flexner to be in charge of finding a locale for the new school. He chose Johns Hopkins University in Baltimore, Maryland. According to Flexner, and with tacit agreement from Rose and Welch, only at Johns Hopkins were the medical professors "full-time men, committed to research and teaching rather than to private practice. These men would not be economically challenged by public health activities. They might be sympathetic to the new school or indifferent, but in any case, they were unlikely to destroy the

fledgling institution by overt or covert opposition.”<sup>14</sup> In 1918, Johns Hopkins University opened the School of Hygiene and Public Health with support from a large endowment created by the Rockefeller Foundation. The extension schools that Rose had envisioned were never established. At the School of Hygiene and Public Health, the focus was very much on research and laboratory science, and that became the model for most subsequent public health schools. Even the Harvard–MIT school, which predated it, was remodeled; the school split from MIT and joined Harvard University. The Harvard School of Public Health opened in 1922 with money from the Rockefeller Foundation, and the dean of the medical school, David Edsall, became dean of the public health school as well.<sup>14</sup>

The result of the Rockefeller Foundation conference was a complete separation of medical and public health education and, to a certain extent, the subordination of public health to private practice. The most prominent physicians and public health leaders of the time attempted to solidify public health education by establishing it as separate from medical education. The consequence was that public health training lagged far behind medical training. The consistent lack of qualified public health workers led the federal government in 1935 to provide funds for public health training for the first time. By 1939, there were 45 institutions awarding 18 different degrees in public health.<sup>15</sup> In 1946, the APHA began accrediting schools of public health, conferring their approval on 10 schools for the MPH and 7 for the DrPH degrees. But this did little to stimulate growth. By 1955, there were still only 10 accredited schools. Even at those schools,

... faculty salaries were so low that advertised positions went unfilled and about 10 percent of all faculty positions remained vacant. As federal support was limited almost entirely to research grants, the research budgets in most of the schools were increasing, while the teaching budgets were static or declining.<sup>15</sup>

The state of public health education began to become untenable in the 1950s, as changes in medicine required physicians to be better versed in public health methods. Clinical trials, a newly important aspect of medical research,

often required the epidemiological and biostatistical skills that public health specialists had acquired.<sup>16</sup> In the 1970s and 1980s, the emergence of infectious disease epidemics, such as multidrug-resistant tuberculosis, herpes, Legionnaires disease, swine flu, and especially AIDS, led to further cooperation between physicians and public health workers and increased funding for such partnerships. The study of obesity, heart disease, type II diabetes, and other chronic conditions also required collaborative approaches. It had become apparent to leaders in both public health and clinical medicine that physicians needed considerably more training in preventive medicine and public health to cope with the new health challenges of the late 20th century.

In 1994, the presidents of the AMA and the APHA met to address the situation. The result was the Medicine and Public Health Initiative (MPHI), a broadly conceived and ongoing program designed “to bridge the near century-wide gulf between the disciplines,”<sup>17</sup> evident by the less than 1% of all U.S. physicians who have received formal training in public health. One of the MPHI’s seven stated goals was to change the education process. One metric of the progress achieved in this particular goal is the growth of MD/MPH programs which nearly doubled in the ensuing decade, reaching a total of 75 by 2005.<sup>17</sup> However, the initiative prompted relatively less change in the educational content of conventional medical school curricula. In 2000, the U.S. Department of Health and Human Services published *Healthy People 2010*, a comprehensive health policy plan for the first decade of the 21st century. Objective 1.7, a clear echo of the APHA’s 1901 statement, recommended increasing “the proportion of schools of medicine, schools of nursing and health professional training schools whose basic curriculum for health care providers includes the core competencies in health promotion and disease prevention.”<sup>6</sup> Many schools are now attempting to realize this objective, but they are facing substantial challenges. The limited availability of funds, crowding of the curriculum, pressures to keep pace with the growing fund of knowledge in the basic and clinical sciences, and the long historical separation of medicine and public health are significant obstacles to the realization of this goal.<sup>18</sup> Nonetheless,

many schools are moving forward with curricular innovations which seek to incorporate more fully public health training for medical students.

### **Incorporating Public Health Into Medical Education: New Directions**

In the past decade, several organizations once again have called for a renewed relationship between medicine and public health. In 1998, the Association of American Medical Colleges urged medical schools to incorporate public health by “first, teaching students the practical fundamentals of the core disciplines that underpin the effective application of population health; second, giving students experiences in studying real populations; and, third, integrating the teaching and learning into all parts of medical curriculum rather than relying solely on a stand-alone population health course.”<sup>18</sup> This policy was underscored by the U.S. Department of Health and Human Service’s *Healthy People 2010* initiative, which advised all medical schools to include “clinical prevention, quantitative skills, health services organization and delivery, and community dimensions of medical practice” in the basic curriculum.<sup>6</sup>

Most schools have responded to the greater need for public health training in two ways: by increasing the availability of MD/MPH programs, and/or by incorporating one or more public health courses into the basic medical curriculum.<sup>17,19,20</sup> This approach, though certainly useful, reifies many of the same assumptions that attended the relationship of medicine and public health throughout the 20th century. Whether intentionally or not, it treats public health as an addendum to the medical curriculum and persists in presenting the two as entirely separate fields.

Recently, several medical schools have forged a deeper relationship between medicine and public health and have begun to break down the rigid dichotomy between medicine and public health.<sup>3</sup> For example, the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, in partnership with Rutgers University and the New Jersey Graduate Program in Public Health, has shifted the focus of their

medical school curriculum, as well as their resource allocation. They developed a joint degree program and created one of the largest preventive medicine departments in the country, with 40 full-time faculty and more than \$10 million in extramural funding. A public health perspective is integrated into the medical curriculum, with more than 100 hours of teaching time for prevention, public health, and population sciences throughout the first two years of medical school.<sup>20</sup>

In another example, Tufts University School of Medicine developed a four-year combined MD/MPH program in 1987. Because Tufts did not have an affiliated school of public health, the program was established in its Department of Family Medicine and Community Health, with public health faculty drawn from other academic institutions, community-based public health practitioners, and medical faculty cross-trained in public health. In this program, first- and second-year medical students take public health core courses: biostatistics, epidemiology, health planning and management, social behavior, environmental health, and public health practice. In their third and fourth years, students in the combined MD/MPH program complete public health rotations and also select advanced public health courses. More than 50% of the graduates of this program pursue careers in primary care.<sup>20</sup>

In 2005, the Brody School of Medicine at East Carolina University incorporated public health as a “curriculum enhancement” rather than a separate course.<sup>21</sup> This integration was part of an initiative to include Case-Based Series in Population-Oriented Prevention (C-POP) in medical education. C-POP instruction guides students from a specific clinical case to larger clinical and population-based prevention issues.<sup>3</sup>

Also in 2005, the University of Wisconsin Medical School changed its name to the University of Wisconsin School of Medicine and Public Health. The name change reflects a vision and commitment to integrate public health and population/community-based approaches into the educational and research missions of the school. The transformation process has begun, with a goal of evolving the medical curriculum into a model that blends prevention and

public health principles into all of the four years. Combined MPH degree programs have been created for students in the schools of medicine, nursing, veterinary medicine, and public affairs. But, more important, the entire “standard” medical student curriculum is undergoing redesign so that the principles of population health, public health, and prevention will be included in all of the core courses in the first two years, and also in the core “clinical” rotations in the third and fourth years, which will have both medical and public health experiential components. This model, once it is fully established and in place for a period of time, will need to be closely examined to see whether the goal of integration has been achieved.

### Reflections on the Past and Looking into the Future

Many aspects of the history of the interplay between medical and public health education ring true today. The crowding of the medical curriculum is perceived by many faculty today as an impediment to curriculum reform, just as it was in 1901. Competition for scarce resources still often prevents the formation of partnerships across disciplines and units, although in our experience, collaboration is a critical mechanism for addressing limitations in resources. It seems that wars and other more natural disasters (including serious epidemics) continue to stimulate acute interest in public health among the medical establishment, but such interest is often short lived.

What seems to be different now than at any other time in our country’s history is the intense national focus on health care, including quality, safety, access, outcomes, and effectiveness. It is difficult to remember an epoch in which presidential campaigns and debates have emphasized access to health care as a primary topic. Leading academic and professional organizations are calling for the healing of the schism between medicine and public health, with little if any formal resistance from practitioners.

We believe the time is right for new models of education in medicine and public health. We emphasize the plural; a single model may not fully address all of our needs. Efforts to create MD/MPH programs at medical schools should be

applauded and encouraged. These programs will help develop the next generation of academic and professional service leaders. But many medical students will not elect to pursue additional “separate” training for a number of reasons. At the University of Wisconsin–Madison, we are developing a new model, in which all of our medical students will be exposed to public health principles and practice throughout the four-year curriculum. We hope that this will produce a different type of physician, one who will naturally incorporate preventive medicine and a population/community focus into his or her practice.

But there remains a clear need for multiple approaches for advancing the integration of public health and medicine. In retrospect, the best outcome of the 1914 Rockefeller Foundation conference might have been the adoption of several, perhaps even *all*, of the proposals. We need strong and vibrant schools of public health, where research and discovery advance our understanding of the underlying basic population health sciences. We also need a national network of public health training programs that maintain a strong pipeline of public health workers for county and state departments. At the same time, the next generation of physicians should be trained to integrate basic, clinical, and the population health sciences and to naturally incorporate the principles of prevention and population-based approaches in their professional activities. Mending the schism offers a vital and essential step in elevating health in an efficient and effective way.

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## Did You Know?

In 1866, faculty at the University of Maryland School of Medicine established the nation's first chair of gynecology and pediatrics, known as "Diseases of Women and Children."

For other important milestones in medical knowledge and practice credited to academic medical centers, visit the "Discoveries and Innovations in Patient Care and Research Database" at ([www.aamc.org/innovations](http://www.aamc.org/innovations)).