How has public health education evolved in the last 100 years? Where is it headed in the future? Six Harvard School of Public Health faculty deeply involved in the revolution now taking place in public health education offer their perspectives.
TRANSFORMING PUBLIC HEALTH EDUCATION

Dean John C. Snyder, then head of the Department of Public Health Bacteriology, teaches a biostatistics class in 1947.
Q. HSPH has been teaching students for 100 years. How are the School’s teaching methods different today from a century ago?

Ian Lapp: If the School’s three founders were to stroll around the campus today, probably the only thing they would recognize is the classroom—and with our new online learning platforms, even that feature is being transformed.

James Ware: There’s interesting neuroscience that suggests that the way we learn is changing. Whereas we used to accumulate a body of facts, with the Internet’s availability, we can now accumulate a body of learning skills. Memorizing a bunch of facts isn’t that helpful. What you really need are strategies for acquiring and organizing and using the information you need, at the time you need it. The actual facts we teach people are very transient. What we hope is that we’re creating a foundation.

Nancy Turnbull: We’ve had a revolution in our understanding of how people learn—in particular, how adults learn—which suggests that many of the traditional modes of education simply aren’t effective. If you’ve been given a lecture, after a week or so or maybe even a day, you retain only 5 percent of what you’ve learned. If you read, your retention isn’t high. But the more actively things happen—if content is demonstrated, if you’ve had discussion groups, if you actually do something—there’s lots more active learning. In the future, we’ll see lots more problem solving in the classroom, more case-based learning, more experiential learning. We’ll move students out in the field much more, taking what they’re learning, working in small groups to actually help organizations solve problems that they’re facing.

Nancy Kane: There are wonderful things faculty can do: team teaching, case-based methods, simulations, games. But teaching in these ways takes real time and effort. It’s just as hard as running a research project.

Julio Frenk: We’ve tended to construe higher education as a tube that has an opening on one end—admissions—and an opening on the other end—graduation. And we assume that something good happens to students when they are inside the tube. But we need more open architecture, where people come into and out of educational institutions during their entire lifetimes.
Q. What are the hallmarks of an HSPH education?

Nancy Turnbull: Students and faculty are firmly rooted in the idea of using knowledge to make positive change in the world. Our faculty are, to a person, both thinkers and doers. And students come here because they want to learn from the people who are actually creating the knowledge.

Ian Lapp: HSPH has always had a reputation for an impressively well-rounded curriculum. As our educational strategy is evolving in the 21st century, we’re formalizing that model and giving it additional emphasis. We want to graduate students with “T-shaped” competencies—meaning, deep knowledge in one area of specialty, but also the breadth of knowledge—the top of the “T”—to reach out to other disciplines, other fields of inquiry. In an increasingly complex and interdependent world, public health professionals must have this kind of well-grounded but flexible orientation.

Julio Frenk: This is a school that truly encompasses everything from genes to the globe. It’s a microcosm of a university, because other than the pure humanities and the arts, you have every field of inquiry: biologists, chemists, physicists, social scientists, legal scholars, ethicists, and, of course, health professionals. And there’s this pioneering spirit at the school. A lot of new fields were invented here. The current comprehensive review of our educational strategy that’s under way keeps alive this tradition of exploring new frontiers in education. We want to bring to education the same rigorous assessment and evidence base that we bring to research.

Q. Is the content of an HSPH education changing?

Nancy Kane: For the past 20 years or so, public health has been taught in five silos: Biostatistics, Epidemiology, Environmental Health, Health and Social Behavior, Health Policy and Management. It was up to the student to take this knowledge base and translate it into a problem-solving mode. Here’s a classic example: You run a malarial control unit in Uganda, in a province with terrible endemic malaria. You have money from the U.S. government, funds to eliminate malaria by spraying with DDT and handing out bed nets and doing the other things. But there are problems. The population doesn’t trust the government because of the history of violence in that country. Organic farming is big in that province, and once you spray DDT, the farmers go out of business. There are inadequate resources to do the DDT spraying correctly. Residents worry about what DDT does to human health and the environment. And bed nets are not always comfortable to use. This situation brings in environment, policy issues of how to make decisions, political and communication issues that come from a history of tribal distrust. This is the reality of public health interventions—and students need to be prepared to adapt to difficult scenarios that are constantly in flux.  

continued
**Ian Lapp:** For most of its history, public health education has been discipline-bound. So now we’re seeking to recast the core curriculum. For example, it makes sense to teach biostatistics and epidemiology together, in the same room or online arena—because that’s how these subjects play out in real life. When you’re an epidemiologist, you can analyze and perhaps draw a conclusion from data only if you know the strengths and weaknesses of the study design.

**Q. Are online learning platforms, such as HarvardX, also revolutionizing the way students learn?**

**David Hunter:** Dramatically. With wider bandwidth in broadband connections available in much of the world, it is now possible to make high-resolution live or filmed video without the image being jerky or taking time to download. So, at its simplest level, lecture-style classes can be offered online to thousands of people all over the world at low cost. We’re very optimistic that these new technologies will also improve the education that students get in person. In theory, at least, the technology-intensive nature of HarvardX enables us to identify struggling students more quickly, and to distinguish between the more and less engaged students. For our residential students, we are introducing this fall Bio 200, one of the introductory biostatistics courses, as a “flipped” classroom. Instead of standard lectures in front of a big class, the lectures are online. Students watch those in the evenings instead of doing homework, and then they participate in a much more active learning style in the classroom when the lectures would normally have been given. Another flipped classroom will be the blended biostatistics-and-epidemiology introductory course.

**Q. Do these new technologies give the School greater global reach?**

**Ian Lapp:** Nearly every week, we receive requests from institutions around the world for help in teaching students the basics of public health. By developing HarvardX courses that our colleagues can incorporate in their curricula, we are helping improve the breadth and depth of content that can be offered worldwide.

**David Hunter:** In public health, we want to get the word out to the most people possible. Our involvement in HarvardX is substantially about getting our core public health messages and methods to the widest possible global audience.

**Q. In public health education, is there a tension between research and practice—the ivory tower and the community?**

**Nancy Kane:** It’s not so much a tension within the institution—it’s a tension within the educational profession. Some schools are much more practice-focused and tied in to the county or state health department—their students intern as epidemiologists or food inspectors. Our school has always focused more on research and developing a new knowledge base. Research universities tend to be stronger at developing the research to inform the practice, rather than training people in the practice. Of course, public health needs both.

**Julio Frenk:** I think it’s a false dichotomy. The world of ideas and the world of action are not separate, as we are often led to believe. Producing and preserving knowledge, making sure that we understand the past so that we can shape the present and the future: That, to me, gets us past ivory tower versus activist models of the university. I like to think more in terms of a circle of knowledge. At HSPH, we have a single product—knowledge—and an
integrated process around knowledge. That includes the production of knowledge, which is done mostly through research. It includes the re-creation of knowledge through education, because good education doesn’t only transmit knowledge, it re-creates it in the mind of the next generation. It includes the translation of knowledge. One form of translation is into new technologies, such as drugs, vaccines, software. Another type of translation is into evidence that guides decision making and action. With action, the world is changed. We then ask new questions, because the world has changed. Closing the circle, we’re back into the production of knowledge.

*James Ware:* We try to do good in the world. And occasionally, someone like a Jonathan Mann, the passionate advocate for human rights, or Alice Hamilton, the pioneer in exposing occupational hazards, comes along—someone who really does take on the villains. That reinforces that notion that we’re championing the public good. So I don’t think of it as research versus practice. When you see how politics works, for example, you realize you have to be practical. If you want to get people vaccinated, you’ve got to figure out how to do it. It’s not enough to say, “Everybody should be vaccinated.”

**EDUCATING LEADERS**

“If you look at the array of leadership positions assumed by graduates of HSPH—directors of CDC, leaders of WHO, senior figures in universities all around the world—it is evident that preparation for responsible leadership is a hallmark of the School. There’s an expectation that you will be prepared to make a real difference in the world and that you should be prepared to take on those responsibilities when they arise and you have the opportunity to serve.”

— Harvey Fineberg
President, Institute of Medicine
HSPH Dean, 1984–1997

**Q. Does one need a missionary zeal to do public health—and can it be taught?**

*Julio Frenk:* Becoming a public health professional starts with a fundamental dissatisfaction with the way things are. If you are a conformist, and you don’t mind a huge gap between what could be achieved with our current knowledge and what we actually achieve with our current practice, then public health is not for you. That dissatisfaction has to be cultivated, because it’s a dissatisfaction that needs to be evidence-based and value-driven.

**MARKS THE SPOT**

When Harvard University and MIT launched the digital platform edX in 2012, they began with just two courses. One of these historic offerings was Harvard School of Public Health’s class in epidemiology and biostatistics, which drew more than 50,000 students around the world, some 5,000 of whom went on to pass the final examination. “I’d have to teach another 100 years to reach that many students in person,” marveled Marcello Pagano, professor of statistical computing and one of the instructors for Health in Numbers: Quantitative Methods in Clinical and Public Health Research—which, like all edX courses to date, was offered free to anyone with an Internet connection.
AGAINST LOST CAUSES

“In my first speech to the School’s faculty and friends, I confessed that one of my attractions to public health was a long-standing passion to fight for lost causes. I quoted T.S. Eliot:

“If we take the widest and wisest view of a Cause, there is no such thing as a Lost Cause because there is no such thing as a Gained Cause. We fight for lost causes because we know our defeat and dismay may be the preface to our successors’ victory, though that victory itself will be temporary; we fight rather to keep something alive than in the expectation that anything will triumph.

“It is gratifying to be able to say that public health is no longer perceived as a ‘lost cause.’ It is not yet, however, a ‘gained cause.’”

—Barry R. Bloom
HSPH Dean, 1999–2008

Ian Lapp: What compels policymakers and what compels individuals to change is the human story. It isn’t good enough to be grounded in your epidemiology, biostatistics, and environmental health. If our graduates can’t figure out both the art and science of creating change, we haven’t done our jobs. This sense of public health mission also means that in the ongoing search for student talent, the School will not judge somebody only by the higher degrees they have, but by the experiences and creativity and passion that they bring to the place.

Nancy Kane: The reason I like teaching here is the idealism. HSPH students want to save the world. We have students ranging from third-year medical students, who are often passionately idealistic, to 50- to 60-year-old seasoned professionals in the public health or the health delivery system worlds, who may not be as idealistic but are still inspired by what they learn here. They go out with renewed vigor, confident that they can make the world a better place. That’s what we do. We inspire people. ✨

High-tech facilities are helping HSPH reach students around the world.
HUMANITARIAN ACADEMY

Future humanitarian responders can learn valuable skills in the classroom, but they need to experience the chaos of crisis to prepare for the demands of fieldwork. HSPH fills that gap with an intensive course offered through The Lavine Family Humanitarian Studies Initiative, the flagship training and professional development program of the Humanitarian Academy at Harvard. The course culminates in a simulated humanitarian crisis held in a nearby state forest. Students work in teams to develop a refugee aid plan while contending with a host of distractions, from child soldiers to rogue journalists. The lessons are potentially lifesaving—for the students and the people they will serve.

“Father” of Harvard School of Public Health

In late 1921, with long-awaited funding of $1.6 million from the Rockefeller Foundation, an independent Harvard School of Public Health succeeded the Harvard-MIT School for Health Officers. Harvard University President Abbott Lawrence Lowell empowered a special committee to undertake the massive project of planning departmental composition and curriculum for the newly endowed degree-granting institution.

No one played a larger role in this exhilarating transition than Roger Irving Lee, Henry K. Oliver Professor of Hygiene, who chaired the three-member committee. “Dr. Lee has been called ‘the father’ of the Harvard School of Public Health both because the School was ‘his baby’ and because he was able to foresee what this infant would be when it grew to maturity,” read an article in the November 1949 Harvard Public Health Alumni Bulletin. In addition to Lee, the committee’s members were Milton Rosenau, one of the School’s three founders, and future dean Cecil Drinker.

Lee was prescient on a wide range of issues. He voiced early support for admitting women, foresaw the relationship between public health and other social sciences, including economics, envisioned a separate department of what was then known as child hygiene, committed the School to industrial health (paving the way for HSPH’s ongoing contributions to workplace safety), and recognized the importance of working hand in hand with community services.

Along with being a key architect of the HSPH that exists today, Lee was known for his kindness. From autumn of 1922 to the spring of 1923, he served as acting dean while Dean David Linn Edsall was occupied with educational surveys in Europe. On December 13, 1922—faced with a busy administrative agenda—his thoughts nonetheless turned to students, and he asked his secretary to be sure they were “looked out for” and had “as many invitations as possible” during the holiday season.

“[W]hen this busy man can make it his job to see that students are taken care of during the holiday season, the sensitivity of his character is thus established,” the Bulletin piece continued. “If the humanism of this man emerges even when he is most involved with the plans for a complex endeavor, then his character begins to partake of greatness.”
Mark Schembri, MPH ’11, never met James Steele, MPH ’42. But in his passion for understanding animalborne epidemics, Schembri is carrying on Steele’s powerful legacy.

Steele—the lone veterinarian in a class of physicians at HSPH, and only the second vet to attend the School—is known as “the father of veterinary public health.” He launched the Veterinary Public Health division of the U.S. Centers for Disease Control and Prevention (a model adopted by the World Health Organization and other international agencies), served as the first Assistant Surgeon General for Veterinary Affairs, spearheaded research that led to the development of a safe and effective rabies vaccine, directed interventions that contained and prevented such infections as brucellosis and salmonellosis, and in 1959 nearly died from a vicious form of H7N7 avian flu.

Steele currently serves as professor emeritus at the University of Texas School of Public Health.

Schembri’s passion for understanding zoonoses—infections transmitted from animals to humans—is a natural extension of Steele’s pioneering work. “Harvard leads the world in dealing with infectious disease outbreaks,” said Schembri, a veterinarian and horse specialist in Australia, explaining why he came halfway around the world for his degree. “Whether it’s cholera in Haiti or anthrax in New York, Harvard plays a role in prevention and response. I wanted to learn from one of the greatest universities how to approach these threats.”

Three-quarters of emerging infections—from SARS to bird flu to HIV/AIDS—begin in animals and then jump to humans. It is no exaggeration to say that the future of humankind will in part hinge on gaining a better understanding of the complex and mysterious paths of cross-species transmission.

One of the earliest to recognize this truth was Steele. “Human and animal health are inextricably linked,” he observed. “They always have been. They always will be.” The same could be said of the passion that Steele and Schembri bring to their shared profession.

Having, like the School itself, turned 100 in 2013, James Steele is believed to be HSPH’s oldest living alumnus.
The man whose muckraking 1910 report spurred a wholesale reform of U.S. medical education had never been a student in the system he critiqued.

A veteran schoolteacher and principal from Kentucky, Abraham Flexner had a passionate interest in pedagogical strategy, fueled by study at Harvard and visits to schools in Europe. His unlikely career as a medical reformer began after his book *The American College* apparently caught the attention of the head of the Carnegie Foundation for the Advancement of Teaching, leading to an invitation to survey medical schools throughout the United States and Canada and make suggestions for their improvement.

*Medical Education in the United States and Canada*—now known simply as the Flexner Report—was a stinging indictment of the era’s medical schools, which for the most part operated as for-profit diploma mills with notoriously lax standards. Flexner proposed that the multitude of vastly inadequate schools be replaced with far fewer but infinitely better university-based programs designed along the lines of German medical education. In particular, Flexner changed the doctor’s education from an apprenticeship model to an academic model, establishing rigorous science and other requirements. The Flexner Report gained regulatory support from the enactment of state licensing laws, leading to the closure of many schools, while others moved to align themselves with Flexner’s vision.

Two years after his report’s publication, Flexner ascended to the rank of secretary of the Rockefeller Foundation, where the reform impulse soon expanded to the newly burgeoning field of public health. In 1915, the Welch-Rose Report that evolved from Rockefeller Foundation deliberations outlined a system of public health education for the United States—essentially doing for public health what the Flexner Report had done for medicine. One notable feature of the new report was the competing visions of its two architects. While Wickliffe Rose favored an emphasis on public health practice, William Henry Welch favored an emphasis on scientific research, the approach that ultimately won Rockefeller support to create the Johns Hopkins School of Public Health in 1916 and, five years later, to establish Harvard School of Public Health independent from MIT, its partner since 1913.

In 2010—a century after the Flexner Report changed the face of medical education—a global independent commission co-chaired by HSPH Dean Julio Frenk took its place in the series of historic reports aimed at reforming health education. Like the Flexner and Welch-Rose reports before it, the commission’s report, published in full in the December 2010 issue of *The Lancet*, targeted the most urgent health issues of the day. Among them: nations’ glaring lack of preparedness for new health threats emerging in a time of rapid demographic and epidemiological transition, and the need for “transformative learning” geared to producing professional leaders within a framework of interdependent professions and institutions. As the commission wrote, “[W]e call for a global social movement of all stakeholders—educators, students and young health workers, professional bodies, universities, nongovernmental organizations, international agencies, donors, and foundations—that can propel action on this vision and these recommendations to promote a new century of transformative public health education.”
Panji Hadisoemarto, SD '14  “In my opinion, the best place to thrive is the place that is least developed. I like research, but I don’t want to do research for itself. I want to see change.”

Anne Newland, MPH ’13  “Medical school and residency are where you learn to take care of individuals. An MPH helps prepare you to take care of communities.”

John Jackson, SD ’13, Horace W. Goldsmith Fellow  “A lot of issues—not just medical treatment itself, but also large social forces such as access to care, poverty, and discrimination—shape people's health. Finding a successful treatment is an important step in improving population health, but it’s one step among many.

One of my research interests is the effectiveness and safety of psychotropic medications and interventions for mental health. I want to understand how they work, why they work, and in what settings, so that we can improve these treatments and the ways they are used.”
## GRADUATES BY THE NUMBERS

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*Graduates of this class currently living outside the United States

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**WORLD MUSIC**

Since 1961, Shattuck International House, a complex of furnished apartments owned and managed by HSPH, has served as a home away from home for more than 3,000 students and their families. Residents—about 60 percent of whom come from abroad—study together, celebrate milestones and holidays as a community, and stage talent shows and potluck dinners showcasing their diversity.
Prince Mahidol Songkla of Thailand (then Siam) kept a low profile while he was a student at HSPH’s predecessor, the Harvard-MIT School for Health Officers, from 1919 to 1921. Years later, classmate Roy Campbell recalled his surprise when the “smart, very nice fellow” he went to movies with revealed his royal lineage just before returning home. Campbell regretted that he had to decline Songkla’s invitation to visit due to the $600 ticket price. Although the prince lived to be just 37, he is revered as the “Father of Modern Medicine” in Thailand for his efforts to enact health care reforms and expand opportunities for public health and medical education in his country.

“I recall Philip Drinker taking us through factories telling us to watch for dirt and accident hazards, and not to take notes in front of our hosts,” James M. Dunning, MPH ’47, wrote in a class note in the Spring 1978 Harvard Public Health Alumni Bulletin.

Thomas Davis, MPH ’54, arrived at HSPH two months tardy, but his $10 late registration fee was waived—presumably because he had just sailed more than 10,000 miles to get there. Davis, a surgeon from the Cook Islands, spent five months traveling with his wife, two sons, and two crewmen from Wellington, New Zealand. He was elected class president soon after his arrival, according to the Harvard Crimson, “following a bibulous beer party for him in the School’s staid lobby.” Davis returned to the Cook Islands after graduation, where he later served two terms as prime minister.

“As an alternative to vacation between the terms, there were ‘volunpulsory’ field trips.” These visits—the predecessors to today’s WinterSession courses—included trips to the New York State public health laboratories, day-care nurseries in New York City, and sewage works and candy factories in Boston. (HSPH yearbook, 1955.)

“But most of all, I remember the times we spent in this room. Eating lunch. Trying to make coffee for 25 people with only three paper cups. I think that’s how it is in Public Health. We’re lucky to have such a good group of people, because otherwise it would be pretty rough. Somehow, we always manage to get coffee.” (HSPH yearbook, 1965.)
Joan Barenfanger, SM ’71, conducted epidemiological studies on trachoma in the oasis and desert villages surrounding the HSPH Microbiology Department's field station in Dhahran, Saudi Arabia. “For me, it put the ‘public’ into public health to be in a country where 90 percent of the population suffered from the infectious eye disease, she wrote in the Summer 1973 Harvard Public Health Alumni Bulletin.

At the 1974 year-end party, the highest-bid-upon item in the first-ever auction for the student loan fund was a bread baking lesson by Dean Howard Hiatt. Robert Reed, professor of biostatistics, entered two original sculptures in the auction. His creation, Aspiring Worms, which was made of Styrofoam packing material, was stolen during the event.

When physician Magdalena Serpa entered the class of 1985 at HSPH, it was an unusual homecoming. She was born in Boston in 1959 while her father, Fernando Serpa-Flores, a former secretary general in Colombia’s Ministry of Health, was an HSPH student. Serpa subsequently pursued a career in child health and nutrition policy.

Posters at HSPH’s June 1988 Commencement ceremony honored alumna Heng Leng Chee, SM ’79, one of nearly 100 Malaysian citizens of Chinese ancestry arrested the previous October and placed under what the Malaysian government termed “preventive detention to avoid racial conflict.” An advocate of women’s rights and the welfare of the poor, Chee was investigating the socioeconomic determinants of health status in a squatter community in Kuala Lumpur at the time of her arrest. Letter writers in a campaign for Chee’s release included HSPH Dean Harvey Fineberg, Harvard President Derek Bok, and Massachusetts Senators Edward Kennedy and John Kerry. Chee was released in August 1988.

Dora Anne Mills, MPH ’97, earned her master’s studying part-time while maintaining her pediatric practice in rural Maine. The brutal commute was worth it for Mills, who told the Harvard Public Health Review in 1996 that her training would allow her to accomplish more through systemic change than she could through individual patient care. Mills later served as director of the Maine Center for Disease Control and Prevention for 15 years and is credited with reducing the state’s rates of tobacco use, teen pregnancy, and childhood obesity.