

lead will be tested in the months and years ahead by numerous challenges, some already occurring and others that reflect the unpredictable nature of infectious disease as well as the extraordinary current political environment.

Foremost among these challenges will be maintaining and expanding confidence in vaccination at a time when vaccine hesitancy represents a growing threat to the success of vaccination efforts. Sustaining vaccine confidence requires coordinated efforts from all those invested in the success of vaccination programs, with the federal government and its health agencies playing a critical leadership role in collecting evidence, developing evidence-based policies and recommendations, and disseminating insights from those activities to health departments, health care providers, and the public. This work is increasingly difficult already, but it would become immeasurably more so if the president were to express doubts again about vaccine safety via social media or other means or if he were to establish the “vaccine safety commission” led by vaccination critics that he considered but did not act on prior to his inauguration. Those actions or similar actions would legitimize long-rejected assertions about vaccine safety and greatly complicate the work of federal

health officials and their agencies in sending clear messages about the safety and value of vaccination.

Budget constraints could further hinder the work of those responsible for US vaccine regulation and policy. The president’s budget for fiscal year 2018 called for major reductions in funding for the National Institutes of Health and CDC, including a 15% reduction in the budget for the CDC immunization program.⁷ To fund operations at the US Food and Drug Administration, the White House proposed relying to an unprecedented extent on user fees from sponsors of regulated products. Congressional leaders and committees responsible for approving government spending have signaled little enthusiasm for these proposals, but even more modest reductions in annual budgets would substantially impede government vaccination efforts and federal financial support for state and local vaccination activities.

Uncertainty regarding the commitment of the current administration—financial and otherwise—to foreign aid and global health, in particular, also poses a threat to future domestic vaccination activities. Recent examples of imported cases of vaccine-preventable diseases such as measles and the emergence of Ebola virus, Zika virus, and other

diseases for which the development of vaccines is a priority underscore the global nature of infectious disease threats. A sustained, well-supported, and coordinated global commitment to infectious disease threats can advance—and has advanced—domestic health priorities, including prevention through vaccination.

THE ROAD AHEAD

The challenges facing US vaccine policy and vaccine policy-makers are many, all the more so given the past statements of the president about vaccine safety and the tenuous place of science and expertise throughout his administration. However, if provided with adequate funding and permitted to work free from political interference, the officials responsible for stewardship of national vaccination efforts should instill considerable confidence among the public that the federal government will continue to pursue a rigorous, science-based approach to sustaining and advancing vaccination programs and policies. *AJPH*

Jason L. Schwartz, PhD, MBE

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have diverse career options. In the 21st century, public health education in China has established a well-structured and multilevel public health professional training system. Public health education in China has

Evolution of Public Health Education in China

For more than 100 years, public health education in China has evolved through several stages: infancy and initial development, creation and stagnation, recovery and reconstruction, and opportunities and development. During these different stages, the name of the discipline has changed from “preventive

medicine” to “public health and preventive medicine” as the number of students in and institutions offering public health degree programs have increased significantly. Numerous graduates have been working for China’s public health system. The curriculum has evolved from mainly biomedicine to social

science and biomedicine combined, and graduating students

ABOUT THE AUTHORS

Both authors are with the Department of Epidemiology and Biostatistics, Peking University School of Public Health, Beijing, China.

Correspondence should be sent to Liming Li, MD, Professor, Department of Epidemiology and Biostatistics, Peking University School of Public Health, 38 Xueyuan Rd, Beijing, China (e-mail: lmlee@vip.163.com). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints” link.

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taken on the mission of cultivating senior professionals who work with the aim of ensuring and promoting public health.

INFANCY AND INITIAL DEVELOPMENT

In 1907, Dr. Junges, a German, began to teach hygiene courses at the Shanghai German Medical School. The School of Hygiene then was set up in 1913. In 1921, John Grant at the Peking Union Medical College embarked on his public health work. In 1932, Professor Chen Zhiqian and his colleagues established a primary health care system in Ding County that focused on health education as well as public health practice.¹ The awareness and promotion of health care at the grassroots level occurred more than four decades earlier than the program “Health Care for All in 2000” proposed by the World Health Organization in 1977. The Ding County Model of health care in rural areas was promoted widely around the world, especially in developing nations.

CREATION AND STAGNATION

In the early days of the People’s Republic of China, a prevention-oriented strategy was established as the fundamental health policy principle at the inaugural National Health Conference jointly organized by the Ministry of Health and the Central Military Commission Department of Health in 1950. Subsequently, departments of hygiene were established in 10 institutions, including the China Medical University, the Beijing Medical School, the Shanghai Medical School, and the Sichuan Medical School. Several teaching groups were set up in the departments of hygiene. For

instance, six teaching groups were set up in the Department of Hygiene in the Beijing Medical School, including epidemiology, maternal and child health, applied nutrition, biostatistics, health education, and school hygiene. During the Cultural Revolution between 1966 and 1976, undergraduate programs were changed to three years while the syllabus and teaching materials were compressed and modified. In addition, the number of enrollment decreased during the time.

RECOVERY AND RECONSTRUCTION

The college entrance examination system was restored across China in 1978, and a new era began for public health education. The medical schools have been upgraded to universities since 1985, and the departments of preventive medicine were upgraded to schools of public health at the same time. In 1993, the first cohort of doctoral students of public health and preventive medicine was enrolled. By 1995, the number of schools and departments of public health increased to 41 around China, with a total of 5753 students enrolled. By 1998, a total of 648 master’s-level students and 32 doctoral-level students had been trained in public health and preventive medicine degree programs in China. In the early 1990s to 2000, China’s institutions of higher medical education underwent a series of changes, from scale to organizational setup. In particular, in 2000, many of the original independent medical institutions and comprehensive universities merged. For example, the Beijing Medical University merged into Peking University, and the Shanghai Medical University merged into Fudan University. These schools of public health have subsequently become integral parts of the comprehensive universities.

In 2000, after more than 20 years of reform, the urgent need for many well-trained public health professionals became clear. The number of enrolled students also increased correspondingly.¹ In 2000, a total of 2675 students were admitted to the bachelor’s program in preventive medicine, and by 2010, this figure had expanded by 2.5 times to 6565 (Table 1). By the end of 2013, preventive medicine programs were being offered in 84 colleges and universities across China. The bachelor’s program was generally five years in accordance with Ministry of Education stipulations.¹ Students who completed the programs successfully were awarded a bachelor’s degree in medicine. In accordance with the principle of individual student training, some institutions have implemented a five- to seven-year flexible learning system.² In these programs, students mainly took courses in basic medicine, clinical medicine, and preventive medicine. The major courses in preventive medicine included study designs in medical research, biostatistics, biomedical testing, and disease prevention and control techniques to build the students’ capabilities in areas such as the control of infectious and chronic diseases, occupational health, food safety testing and monitoring, and health management. In addition,

more than 60 colleges and universities offered degree programs for biomedical testing in public health.

After more than 100 years of development, China’s public health education system now consists of a multilevel structure of bachelor’s-, master’s-, and doctoral-level education. By the end of 2016, 93 colleges and universities across China offered five-year bachelor’s degree programs in preventive medicine. The five-year, four-section undergraduate program is now the dominant model of public health education in China. It comprises (1) general education, (2) fundamental medical courses, (3) training in clinical medicine, and (4) training in public health. Students who graduate from the program are awarded a bachelor’s degree in medicine. The core subjects in the program are basic medicine, clinical medicine, and preventive medicine. The core curriculum in preventive medicine typically includes epidemiology, biostatistics, health education, occupational health, environmental health, nutrition and food safety science, health management, toxicology, child and adolescent health, and maternal health. A total of 13 universities now have been authorized to offer doctoral degree programs in public health. More

TABLE 1—Number of Students Admitted to Preventive Medicine and Clinical Medicine Undergraduate Programs: China, 2000–2010

Year	Clinical Medicine	Preventive Medicine
2000	89 468	2 675
2002	105 815	3 164
2005	147 726	4 417
2006	155 242	4 641
2008	175 221	5 239
2009	202 892	6 066
2010	219 549	6 565

Source: Liming L, Qingwu J. *Public Health in China*. Beijing, China: People’s Medical Publishing House. In press.

than 40 schools of public health offer part-time and full-time master of public health degree programs. Schools of public health now recruit approximately 7000 students for their bachelor's programs, 1500 students for master's programs, and 400 students for doctoral programs each year. Graduates of these programs mainly work in organizations such as the Centers for Disease Control and Prevention, health inspection and law enforcement agencies, medical institutions, environmental protection departments, import and export inspection and quarantine departments, research institutes, colleges and universities, and health administration departments.

OPPORTUNITIES AND DEVELOPMENT

With the rapid development of science and technology, the human lifestyle and the environment we rely on are undergoing profound changes. Industrialization,

urbanization, the widespread application of information technology, globalization, and population aging have resulted in many unprecedented challenges to public health. In addition to threats posed by climate change, ecological changes, environmental degradation, food safety, occupational hazards, and terrorism, China is facing threats from emerging infectious diseases and chronic, noninfectious diseases. Educating high-quality public health professionals who are able to adapt to such rapid changes in the society and respond more effectively to new global public health challenges is a major task. Progress has been made in several areas. First, to better prepare doctoral-level graduates for public health practice and practice-based research, Peking University and Fudan University received approval to initiate a doctor of public health program in 2017. Second, Essential Requirements in Public Health Education developed by the Chinese Preventive Medicine

Association in 2006 identified core competencies, including six domains of professionalism, fundamental knowledge of medicine, knowledge of public health disciplines, health management and social mobilization, health information management, and skills of scientific research.¹ Core competency frameworks for public health disciplines such as epidemiology also were developed to guide and improve educational practice.³ Third, the Schools of Public Health are collaborating with the Centers for Disease Control and Prevention throughout China to establish field training centers for public health students to improve the competency of public health practice. Finally, to meet the demand for capacity building of the graduates engaged in public health practice, the National Health and Family Planning Commission Program Committee recently recommended the implementation of standardized training for public health practitioners as a major form of

postdegree training for young graduates. Qualified experts are developing the specific implementation framework.

Public health education is the foundation of public health practice. Only through continuous reform and development can public health education fulfill the historical mission of improving population health and promoting social development in China. *AJPH*

Tao Wu, PhD
Liming Li, MD

CONTRIBUTORS

Both authors contributed equally to this editorial.

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Publicly Funded Family Planning Under Unprecedented Attack

Never in its history has the nation's family planning safety net been in such jeopardy as it is today. The policy agendas of the Trump administration, Congress, and many states are being shaped by leaders adamant in their ideological opposition to—and intent to dismantle—the funding streams and providers that have long constituted the US publicly funded family planning effort.

PUBLICLY FUNDED FAMILY PLANNING

For decades, government programs—primarily

Medicaid and Title X—have worked together to expand access to contraceptive care for low-income and other underserved individuals. Guttmacher Institute research shows that in 2015, a total of 6.2 million women received publicly funded contraceptive services from some type of safety-net health center, which helped them to avoid 1.3 million unintended pregnancies.¹ These unintended pregnancies, in turn, would have resulted in 453 400 abortions. Without publicly funded family planning, rates

of unintended pregnancy and abortion would have been 67% higher.

Publicly supported family planning also yields considerable dividends for taxpayers. According to Guttmacher's most recent estimates, in 2010, these services resulted in federal and state government savings of \$13.6 billion.²

ABOUT THE AUTHORS

Both authors are with the Guttmacher Institute, Washington, DC.

Correspondence should be sent to Rachel Benson Gold, Vice President for Public Policy, Guttmacher Institute, 1301 Connecticut Ave NW, Suite 700, Washington, DC 20036 (e-mail: rgold@guttmacher.org). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints" link.

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Despite the importance of contraception in women's lives and the demonstrated effectiveness of the US publicly funded family planning effort, the providers and programs comprising that effort are under sustained—and intensifying—political attack.

Medicaid provides insurance coverage to millions of low-income women, enabling them to affordably obtain needed health services. Title X provides grants to safety-net health centers, making it the national family