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PERSPECTIVES

A National Public Health Workforce to Control COVID-19 and Address Health Disparities in the United States

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A large, well-trained public health workforce is needed to control coronavirus disease 2019 (COVID-19) in the United States in the short term and to address other disease burdens and health disparities in the long run. As the public health workforce declined following the 2008 financial crisis, many US jurisdictions struggled to hire a sufficient number of staff for roles initially including testing and contact tracing and more recently for vaccination. Ultimately, COVID-19 control will require a combination of vaccination and rapid investigation, contact tracing, and quarantine to stop chains of transmission. New federal resources for a public health workforce have been made available. With appropriate attention to addressing administrative barriers and ensuring equity, a 21st-century US public health workforce will hasten the control of COVID-19, provide economic relief to individuals and communities, and reduce the burden of other infectious diseases, noncommunicable diseases, and other disease burdens. A long-term commitment to a robust public health workforce is vital to ensuring health security and preparedness for future health threats.

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A large, well-trained public health workforce is needed to control coronavirus disease 2019 (COVID-19) in the United States in the short term and to address other disease burdens and health disparities in the long run. Health authorities recognized early in the COVID-19 pandemic that a substantial surge in the number of public health staff would be needed to implement testing and contact tracing and to help ensure social support for isolation and quarantine, especially for vulnerable populations [1]. In the wake of budget cuts following the 2008 financial crisis, the number of contact tracers, known as disease intervention specialists, in the United States had fallen to only around 2000 by the beginning of the pandemic. For COVID-19 contact tracing alone, estimates of national staffing needs ranged from 100 000 to as many as 300 000 workers [1].

State, territorial, local, and tribal health departments sought to hire, train, and manage contact tracers and other new public health responders with limited federal funding and guidance. Although some jurisdictions, such as New York City and San Francisco, dedicated substantial funding to building systems and hiring personnel, most struggled. In the early summer of 2020, data from 62 health departments showed that only a median of 57% of cases were interviewed within 24 hours of being reported and only a median of 55% of contacts were notified within 24 hours of identification [2]. A negative correlation between health departments' COVID-19 caseloads and both the percentage of COVID-19 patients interviewed within 24 hours and the number of contacts identified per patient indicates that staffing levels were a rate-limiting factor in maximizing the impact of contact tracing. Even with the relatively low case numbers in the early fall of 2020, fewer than a dozen states had sufficient personnel (defined as at least 5 contact tracers per daily case) to identify, interview, and manage cases and contacts [3]. The potential impact of contact tracing was further limited by inadequate testing capacity, delays in reporting test results, and unwillingness of the public to volunteer information on contacts and adhere to quarantine recommendations.

More than 1 year into the outbreak, the number of public health workers dedicated to COVID-19 contact tracing has increased substantially and is approaching the original target of 100 000 [3]. During the fall and winter resurgences, however, case numbers rapidly exceeded that capacity, resulting in some jurisdictions partially or completely abandoning contact tracing [4]. At the same time, the same limited supply of public health personnel are now managing and delivering the largest urgent vaccination program in the country's history. In some localities the National Guard is being deployed to assist with vaccination, as they had been earlier for contact tracing. Some health departments are reassigning staff from contact tracing and other response activities to support vaccination [4]. In the short term, these decisions are entirely rational given the magnitude and duration of benefit for vaccination compared with contact tracing. But in the medium

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term, the country needs a large, well-trained, well-coordinated public health cadre that can conduct contact tracing and other COVID-19 interventions. A public health workforce is also a critical component of the delivery of health care interventions such as testing and vaccination. Nonclinical roles include coordination, outreach, community engagement, scheduling, registration, data entry, translation, logistics, sanitation, and security.

COVID-19 case numbers will likely remain elevated or flare up in some localities for months to come. Because global vaccine supply and distribution are limited and some are reluctant to be vaccinated, immunization rates will remain below the level of population immunity in parts of the United States and much of the world. As with measles and polio, COVID-19 control will require a combination of vaccination and rapid investigation, contact tracing, and quarantine to stop chains of transmission from local and imported cases. Case investigation and contact tracing will be even more feasible and have a greater impact as case numbers decline. These interventions will have a critical role in controlling COVID-19. Countries that have fully controlled transmission to date have done so only with robust case investigation and contact tracing. In New Zealand, for example, contact tracing brought the average time from onset of illness to isolation from 7.2 days in March 2020 to –2.7 days in April. That means that, on average, cases were isolated 2.7 days before they fell ill, and local transmission dropped to 0 [5]. In the future, case investigation and contact tracing workers may also be involved in targeting initiatives for community vaccination or postexposure prophylaxis with antibody or antiviral therapies, directly linking contact tracing and vaccination efforts.

The *Coronavirus Response and Relief Supplemental Appropriations Act*, which was signed into law on December 27, 2020, included $19 billion awarded to health departments for testing and contact tracing, including public health workforce needs [6]. The new *National Strategy for the COVID-19 Response and Pandemic Preparedness*, released on January 21, 2021, and the Executive Order *Establishing the National Pandemic Testing Board and Ensuring a Sustainable Public Health Workforce for COVID-19 and Other Biological Threats*, signed on January 20, 2021, articulate a commitment to establish a US Public Health Workforce Program of at least 100 000 new community-based workers to assist with COVID-19 testing, tracing, and vaccination in the short term and address other health burdens postpandemic [7]. More recently, the *American Rescue Plan* was signed into law on March 11, 2021 [8]. It includes $7.4 billion to recruit and hire public health workers for a variety of public health roles, including vaccinations, testing, contact tracing, case management, and support for outbreak investigations. Funding is also designated for training public health workers including epidemiologists and laboratory and data scientists. The pipeline of trainees in public health must be further expanded to meet the long-term needs of the nation.

It will be imperative to address administrative or other barriers to rapidly scaling up this workforce with federal resources and leadership and coordination and collaboration of local and state authorities to monitor progress, rapidly identify bottlenecks, and bring solutions to bear, which could include private sector, not-for-profit, or federal hiring mechanisms. Significant improvements in administrative capacities related to human resources are needed at all levels of government. Sustainable solutions are needed to enable health departments to expand their workforce for the longer term, beyond the availability of pandemic-related funding. When COVID-19 comes under control, these public health workers can reinvigorate other longstanding programs for the control of communicable diseases, including syphilis and tuberculosis, as well as ending the HIV epidemic, a relatively new national priority. Other substantial health threats that can be addressed by community public health workers over the long run include health education, screening and treatment support for cardiovascular disease, cancer, diabetes, mental health disorders, and substance use disorders/drug overdose. These workers will also have vital roles in ensuring the nation's health security by responding to future health threats, including new pandemics and disasters related to climate change. An adequate workforce could help control the next disease outbreak before public health and medical capacities are overwhelmed [9].

One fundamental principle is that the public health workforce should address health disparities, and its geographic distribution should match the burden of disease—COVID-19 in the short term and other major disease burdens in the long run [10]. COVID-19 and many other major health challenges disproportionally affect vulnerable and marginalized populations including those with lower incomes, racial and ethnic minorities, and immigrant communities. The workforce should be under local management and comprised of individuals who have shared life experience with the communities they serve. There is a unique opportunity to leverage local community-based organizations to do this work. A well-trained workforce of workers drawn from the community is integral to delivering culturally sensitive, language-concordant care and support. Such a workforce will be critical to effective program planning and management and building the trust required for acceptance of contact tracing, vaccination, and other health interventions. Part of the solution could be an expansion of the Commissioned Corps of the US Public Health Service, which employs more than 6000 uniformed public health professionals, including the addition of a Ready Reserve Corps, although this is intended to provide surge capacity, not to be a permanent workforce [11].

These plans come at a time when unemployment is still high, especially in populations hard-hit by COVID-19. Providing jobs to control COVID-19 is a quintessential win-win for economic recovery and health improvement. With a successful scale-up of the public health workforce, public health authorities will not have to make difficult trade-offs between essential programs like contact tracing and vaccination. A robust, responsive public health workforce will hasten control of COVID-19, and, moreover, transmission will not be interrupted without it.

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