


State Strategies for Addressing Barriers During the Early US COVID-19 Vaccination Campaign

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 See also Morabia, p. 982, and the Vaccines: Building Long-Term Confidence section, pp. 1049–1080.

Under Operation Warp Speed (OWS), the US government invested an unprecedented \$10 billion to speed the development, manufacturing, and distribution of a COVID-19 vaccine, resulting in emergency use authorizations for two effective vaccine products in a record-breaking 11-month time frame.¹ Although this is a remarkable scientific accomplishment, the United States now faces the urgent task of ensuring widespread acceptance and uptake of COVID-19 vaccines to contain the COVID-19 pandemic, and begin to resume normal economic, educational, and social activities. The operational responsibility for ensuring that COVID-19 vaccines are safely and efficiently delivered in a jurisdiction falls largely on state, territorial, tribal, and local governmental public health systems that support jurisdiction-wide vaccination efforts for a variety of immunizations, including childhood diseases and seasonal influenza. Ultimately, state and

territory governors are responsible for the “last mile” of COVID-19 vaccine distribution in their states and ensuring that vaccination is efficiently prioritized for those who need it most, as well as administered, tracked, and reported to the federal government. Although all states and territories have developed plans to increase capacity, enhance data systems, and develop partnerships to support this complex effort, the initial rollout of vaccine allocations did not match federal projections and public expectations; states reportedly distributed roughly one third of allocated doses in the first two weeks of the program.²

Although vaccine distribution speed and the number of doses delivered on a weekly basis dominated media coverage of the early rollout, the actual overall public health goal of the COVID-19 campaign is to reach herd immunity in the United States, whereby enough people have immunity from COVID-19

to protect against community transmission, as soon as possible.³ The importance of this goal has been heightened, given new COVID-19 variants and the need to prevent infection while vaccines are still efficacious against the strains most prominent worldwide. Experts estimate that as much as 80% to 85% of the population (or 300 million) will need to receive a COVID-19 vaccine to achieve this goal—a task made even more urgent, as confirmed cases of more transmissible COVID-19 variants spread in the United States.⁴ The development of three authorized vaccines, with more vaccine products in the pipeline, provides hope that this goal will be achieved, but the supply of vaccine and the rate of vaccination are limiting factors.

States are working to increase their vaccination capacity by setting up community “megaclinics” capable of vaccinating thousands of individuals in a day, but their ultimate success depends on having sufficient supply to meet demand. States are also addressing the logistical problems involved in scheduling vaccine appointments across multiple sites, which may include hospitals, pharmacies, state or local governmental public health clinics, federally qualified health centers, and other venues with independent scheduling systems. States also must balance vaccinating quickly with vaccinating equitably—first providing vaccines to those who need it most, not just those who can schedule an appointment first.

OWS officials predicted that states would distribute vaccines to 20 million individuals by the end of December, 2020, with supply ramping up in subsequent months.⁵ The first vaccine in the United States was administered on December 14, 2020. A little over two weeks later (January 1, 2021), 4.2 million people

had received their first dose according to data reported to the US Centers for Disease Control and Prevention (CDC).⁶ On January 12, 2021, Trump administration officials announced a number of changes to speed vaccine delivery, including recommending expanding eligibility to all Americans who were 65 years or older and to those with chronic conditions that placed them at increased risk of COVID-19 complications.⁷ The administration also committed to releasing vaccines to states, instead of holding half back, to ensure that sufficient vaccine was available for second doses to those who had received their first dose 21 days (Pfizer) or 28 days (Moderna) before.⁸ However, federal officials subsequently determined that no second doses were actually held back and that OWS was allocating available doses directly to states. On January 15, the incoming president-elect's transition team announced a national COVID-19 vaccination plan that recommended expanding eligibility to individuals who were 65 years and older as well as to frontline workers.⁹ Although they support the push to expand eligibility and to get all vaccines available into the arms of willing Americans, state health officials remain concerned about staying true to the equity principles that were part of the federal phased recommendations (as detailed in "Speed, Efficiency, Priority Groups, Equity"), as well as ensuring that there will be sufficient supply to provide second doses to all who need them in accordance with the US Food and Drug Administration's emergency use authorization for both the Pfizer and Moderna vaccines.

We look back on the first two months of vaccine distribution (December 2020 and January 2021) and consider the challenges experienced at the state level

as the country looks ahead to the long-term campaign to vaccinate everyone in the United States. We identified these challenges by reviewing each jurisdiction's COVID-19 vaccine plan¹⁰ as well as by conducting interviews with state and local leaders, making all-jurisdiction planning calls, and reviewing media reports covering COVID-19 vaccination planning and implementation. Three key challenges for states emerged from reviews of state plans and the actual experience in the first weeks of the COVID-19 vaccination effort: (1) needing to balance speed, efficiency, equity, and protection of vulnerable populations; (2) expanding the vaccination workforce and state and local capacities to vaccinate; and (3) addressing communication and vaccine hesitancy. Each of these challenges is being addressed by states, and by federal and local partners, as public health leaders and policymakers seek to vaccinate as many people as possible in the coming months. Understanding these challenges more deeply and incorporating lessons learned from early rollout experiences into future planning are essential to improving vaccine distribution in the months ahead.

SPEED, EFFICIENCY, PRIORITY GROUPS, EQUITY

The early planning efforts of state health agencies in October 2020 using the CDC's *COVID-19 Vaccination Program Interim Playbook for Jurisdictional Operations* assumed a limited initial supply of vaccines.¹¹ Accordingly, states outlined plans for prioritizing early access to certain populations who were most vulnerable to virus exposure or who were most likely to experience severe illness if infected. Adapting to unpredictable shifts in vaccine supply and changes in federal policy in the early

weeks of the campaign, and working to quickly respond to emerging logistical challenges have become a daily challenge for state immunization programs. In no instance has this task been more difficult than in identifying who should be first in line to receive the vaccine in a manner that is fair, efficient, and clear to the public. Early uncertainty in priority groups and in vaccine supply availability meant that state plans needed to be iterative, high-level documents that addressed categories of operations and not detailed logistics. These initial documents were not specific tactical plans that could estimate the throughput needed and staffing capacity week by week.

With the authorization of both the Pfizer and Moderna vaccines, the CDC's Advisory Committee on Immunization Practices (ACIP) recommended a detailed prioritization scheme for delivering limited vaccine to health care workers, elderly individuals, those at risk for severe illness, and essential workers at high risk for exposure.¹² ACIP's recommendations, however, are just that—recommendations—and governors ultimately decided what groups would be eligible to receive a vaccine on a state-by-state basis. Although states consistently adopted ACIP's recommendations for the first phase of the campaign (phase 1a), which prioritized health care workers and long-term care residents and staff, states developed significantly more varied approaches for phases 1b and 1c, which included categories or subcategories of individuals older than 65 years, individuals with comorbidities, and a broader group of essential workers.

Early in the rollout, as states faced hesitancy in some communities and sites reported difficulty in filling vaccination slots because of scheduling,

demand, and the complexities associated with thawing and storing the vaccine and the delivery of vaccine in very specific quantities, many states shifted to broadening eligibility categories to ensure that vaccine could be delivered to others to avoid waste or unused dosages. Spurred by changes in federal policy in the last week of the Trump administration, which proposed to tie states' future vaccine allocations to a state's performance in administering and reporting vaccinations, a number of states further expanded eligibility categories to rapidly expand the flow of vaccines into their population. Although the Biden administration did not implement such a performance-based policy, it did continue to push for a more flexible interpretation of ACIP guidelines and suggested that states could speed up vaccination efforts if they expanded beyond initial eligibility groups (i.e., hospital and frontline health care workers and residents of long-term care facilities).

Additionally, although flexibility in prioritization and allocation has allowed states to develop strategies that can meet each state's unique public health infrastructure and needs, shifting approaches and variability across states has contributed to confusion and difficulty in communicating vaccine eligibility and availability to the public. As vaccine supply becomes more predictable, and as state and local tactical plans shift toward expanding the number of vaccination sites in retail pharmacies and additional public health clinics, a more predictable schedule of what priority groups will be vaccinated and when is anticipated. This will not, however, address interstate variation in eligibility, as these are state decisions, nor will it address vaccine availability, as the federal government has assumed procurement

of available vaccine on behalf of all states.

To help provide the public with up-to-date information, a number of states have developed scheduling systems and information campaigns to help individuals determine when they can expect to receive the vaccine. Additionally, some states have begun allowing individuals to preregister through state portals, which will provide up-to-date information on current eligibility and appointments for vaccination. The ability to schedule appointments online is important, but also needs to be complemented by phone and in-person sign-ups for individuals who lack Internet access or are not fluent in using online systems.

VACCINATION WORKFORCE AND CAPACITY

Many state immunization programs already have networks of providers and health systems enrolled as vaccine providers who are very familiar with typical vaccination activities as part of their day-to-day operations. However, this provider capacity is not sufficient to support the rapid distribution of COVID-19 vaccine at scale, and states need to continue to expand their workforce to increase the numbers of vaccinators and sites for vaccine distribution. In the initial phase 1a rollout, many states partnered with health systems in their states for the initial distribution to health system staff. States also had the option of participating in a federal government pharmacy program in which the federal government partnered with pharmacy companies CVS and Walgreens to provide the capacity for vaccinating long-term care staff and residents in every state.

States have considered a variety of approaches for expanding their pools of potential vaccinators. Although the federal government has already authorized pharmacists to procure and administer COVID-19 vaccines, several states are examining expanding their scope of practice or licensure for COVID-19 vaccine administration by nontraditional providers, such as advanced emergency medical technicians, paramedics, and medical and nursing students. Additionally, several states have identified plans or announced emergency waivers allowing nontraditional partners, such as respiratory therapists, dentists and dental hygienists, podiatrists, midwives, and veterinarians, to provide additional support and capacity.¹³ States and local health agencies are mobilizing volunteers through public health efforts such as the Medical Reserve Corps.¹⁴

To boost capacity, states are considering or have announced plans for deploying their National Guard to assist with vaccine administration and other logistical efforts.¹⁵ States are also examining a variety of vaccine delivery modalities to address barriers facing underserved populations. These include using seasonal influenza and drive-through testing sites as large-scale community vaccination sites, encouraging pharmacies to set up outreach clinics, and using other sites such as mobile health clinics, federally qualified health centers, Indian Health Service clinics, homeless shelters, harm reduction sites, churches, and primary care offices.

COMMUNICATIONS AND VACCINE HESITANCY

Across the country, states have observed hesitancy among health care

workers and nursing home staff, which are disproportionately composed of individuals of color. According to recent research,¹⁶ a significant percentage of Black and Latinx community members reported concerns about safety or side effects, preferring to take a wait and see approach that would allow others to go first. Other respondents reported a significant distrust of public health authorities, rooted in both historical trauma and contemporary concerns, which contributes to vaccine hesitancy. Ensuring that communities have access to culturally appropriate resources and information, delivered through trusted messengers, is critical to addressing ongoing disparities in the impact of COVID-19.

To address these challenges, states have employed different strategies, as outlined in their vaccination distribution plans and refined in response to actual events. States are launching public information campaigns to communicate with the public about COVID-19 vaccine availability and safety. Some states have engaged communication firms to design and implement these strategies, and others will work through existing communications resources and partnerships, including federal efforts currently under way. States are also drawing on or building partnerships with community leaders, faith-based leaders, and trusted community organizations to reach critical populations, minimize misinformation, and increase public acceptance among communities of color.

MEETING THE CHALLENGE

An accurate forecasting of supply remains a critical issue to be addressed at the federal level, as week-to-week changes in supply continue to severely challenge logistical planning efforts. The recent announcement of \$3 billion in

federal funding to support vaccination activities in the states and territories will provide welcome relief to public health agencies strained from months of pandemic response, as will the Biden administration's initiative to expand the support provided to states for vaccination efforts.¹⁷ However, states will need to act quickly and judiciously in dispersing new funding to support urgently needed communications, outreach efforts, and technology solutions; mobilizing mass vaccination clinics; and hiring trained personnel to support these efforts. States will also turn to strategies to increase clinic capacity so more individuals receive the vaccine more quickly. Such efforts include setting up mass vaccination clinics that states will need to partner with a number of different organizations.

The media and some federal and state policymakers have scrutinized the early weeks of the COVID-19 vaccine rollout as failing to meet initial expectations for numbers of individuals vaccinated. The reasons for the perceived slow start to this unprecedented COVID-19 vaccine rollout are complex and multifaceted, and health officials predicted many of them before December 2020.¹⁷ These include shifting supply projections and uncertainty in weekly total allocations of vaccine to states, a lack of commitment of federal funding to states to support vaccine distribution at scale until two weeks into the rollout itself, delays in the reporting of doses administered as new tracking systems were set up, delays in provider reporting of the number of individuals vaccinated in their clinics, vaccine hesitancy among many groups eligible to be vaccinated including health care workers and residents and staff of long-term care facilities, and many other challenges that can accompany the launch of a public health campaign of this scale and complexity.

States are now expanding partnerships and collaborations with key stakeholders, such as pharmacies, community health centers, community organizations, and employers, to address challenges and ensure that vaccines are distributed in an equitable and fair manner in every jurisdiction. As reported by the Association of State and Territorial Health Officials, most states predict a rapid increase in the number of individuals a state will be able to vaccinate after expected problems and early issues with the vaccine rollout.¹⁸ However, the vaccine production and supply required to meet demand remain a concern. The early challenges of the vaccine rollout are important to address as states and territories collaborate with local and federal partners to improve vaccine distribution in the months ahead. **AJPH**

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PUBLICATION INFORMATION

Full Citation: Tewarson H, Greene K, Fraser MR. State strategies for addressing barriers during the early US COVID-19 vaccination campaign. *Am J Public Health*. 2021;111(6):1073-1077.

Acceptance Date: February 13, 2021.

DOI: <https://doi.org/10.2105/AJPH.2021.306241>

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The authors contributed equally in the preparation of this article.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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