

## VIEWPOINT

# One Year of COVID-19 Vaccines

## A Shot of Hope, a Dose of Reality

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**One year** after the first authorized COVID-19 vaccine was administered in the US, the nation celebrates a historic achievement in vaccine development and delivery. In 12 months, more than an estimated 200 million people in the US have completed their primary vaccine series. Vaccination has prevented millions of COVID-19 cases and hospitalizations and saved hundreds of thousands of lives. A report released in December 2021 by the Office of the Assistant Secretary of Planning and Evaluation highlights the large effects of vaccine on health, and also the estimated social value of avoiding COVID-19 hospitalizations and deaths.<sup>1</sup>

Averted hospitalizations, deaths, and costs represent only the quantifiable outcomes associated with vaccination. The unmeasurable effects are profound: older people celebrating birthdays and holidays with grandchildren; children returning to in-person learning; people with comorbidities relieved by additional protection; physicians, health care professionals, and other essential workers having the confidence to continue to perform their critical duties; and more. With vaccination, what was impossible for much of 2020 again became possible in 2021.

To achieve this success—getting hundreds of millions of doses of safe and effective vaccines administered quickly and with widespread public confidence—required investments beyond the costs of the large networks of clinical trial sites and of manufacturing

cine effectiveness assessments informed timely changes in vaccine recommendations.

### Vaccines Do Not Save Lives, Vaccinations Do

As with many aspects of this pandemic, there are hard lessons learned. Success now and in the future requires an all-of-government approach, including the research and discovery expertise of the National Institutes of Health, development expertise of the Biomedical Advanced Research and Development Authority, logistics expertise of the Department of Defense, and programmatic expertise of the Centers for Disease Control and Prevention (CDC) and other public health agencies. Collaboration and communication must be across all levels of government.

Great vaccines can be developed, evaluated, produced, and delivered, but they are only effective when administered. Implementation requires state and local public health, community, and faith-based organizations, and trusted local messengers in addition to multiple federal and state partners and resources. Equitable access must be a high priority, facilitated at every step and continuously monitored. For example, with the intent of expanding and expediting access to vaccines, initial COVID-19 vaccine administration relied on digital scheduling tools. Some adults had limited or no access to digital tools, and communities rapidly responded through local efforts to schedule appointments for these individuals by telephone or in-person contact.

One scalable success of COVID-19 vaccine implementation is expansion of where public health may be delivered. Vaccines were given in pharmacies, at community centers, in small and large parking lots, and in mobile clinics in rural and urban communities. The pandemic has proven that almost any location

can rapidly be converted to provide clinical community care, such as testing and vaccination. In an already decentralized health care system, linking electronic data from an individual and across different settings can be challenging; efforts in data modernization allowed for integrating data systems to capture deidentified data nationally and share those aggregate data publicly. Innovative digital platforms, such as the CDC's v-safe (which was new for COVID-19 and has enrolled more than an estimated 10 million vaccinated participants), provide novel ways for public participation in vaccine safety surveillance and to communicate the large benefits and small potential risks to ensure continued trust.

The dissonance between highly effective vaccines and a virus that continues to evolve is a reminder that while there have been some successes, it is essential to remain vigilant to what may come next.

doses before authorization. The COVID-19 vaccination program would have failed without investments in communities to support multipronged efforts that expanded access, built trust, and addressed vaccine hesitancy. Without funding and supporting public health workforces in local, state, territory, and tribal jurisdictions, along with their mobilization of community and faith-based organizations, the US could not have ensured ample and equitable opportunities for people to get vaccinated. By expanding real-time surveillance and research networks to evaluate vaccine safety and effectiveness, even exceptionally rare vaccine safety signals were identified, evaluated, and shared publicly in record time. Concurrently, rapid vac-

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## Overcoming Disinformation About Vaccines

While disinformation about COVID-19 vaccines continues to be disseminated, more than an estimated 75% of US residents aged 5 years and older have initiated vaccination in the past year. This leaves approximately 25% of eligible individuals in the US who are unvaccinated, most by choice. Like wearing a helmet while riding a bike or wearing a seat belt while in a car, getting routinely recommended vaccines is a historically trusted prevention measure and a foundational public health intervention. Over the past 2 years, with individuals exhausted from the personal, economic, and mental toll of the pandemic, disinformation about COVID-19 vaccines swiftly infiltrated communities. Although spreading vaccine hesitancy at the population level is easy, counteracting disinformation is uniquely challenging in the context of widespread use of social media. It often requires time for one-on-one discussions, active listening, attention to personal concerns, and thoughtful answers to questions.

Throughout the COVID-19 vaccine program, the CDC is committed to full transparency in the decision-making process. The messaging set expectations, such as programmatic goals, the timing of vaccine availability, and the cadence of safety and effectiveness reporting. While first messages have great sticking power, evidence-based changes in guidance are inevitable when new data must inform next steps. Communicating these shifts in a way that builds on the foundation of public trust and confidence in the decision-making process is critical.

The US is in a different place today than 1 year ago. Now, it is possible to assert that COVID-19 is largely a vaccine-preventable disease and in the next several months, vaccines will likely be available for children aged 6 months and older, extending protection for nearly all people in the US. Prophylaxis for immunocompromised persons is now available and oral antiviral treatments may soon be avail-

able for those at risk of significant disease, which will reduce stress on an overburdened health care system. Recommendations for booster doses in response to waning immunity may provide broader protection against emerging SARS-CoV-2 variants.

## A Global Pandemic Must Be Met With Global Solutions

Although there has been remarkable progress, these advances have been implemented all too slowly in many parts of the world. It is critical to expand the capacity to manufacture, produce, deliver, and administer vaccines globally and overcome challenges from cold-chain storage requirements, to health care infrastructure, to scientific mistrust. The US and the global community must do all they can to ensure that populations have accurate information about the benefit of vaccines, that doses are available, and that countries have resources for administration. Already, the US has delivered nearly 300 million COVID-19 vaccine doses to more than 100 countries and is investing an estimated \$1.5 billion to build the infrastructure necessary and build confidence.<sup>2,3</sup> These investments are necessary for COVID-19 and for known and as-yet-unknown vaccine-preventable pathogens.

Two years after the first COVID-19 cases were detected in Wuhan, China, a new variant, Omicron, looms heavily on the world with unknown implications for vaccine protection, disease severity, and viral transmission. The emergence of Omicron reinforces the importance of equitable global access to COVID-19 vaccines and the commitment to global public health collaboration. It is not enough for people in the US to get vaccinated; the US also has the responsibility to support vaccination efforts around the world or more lives will be lost, and COVID-19 will not be controlled. The dissonance between highly effective vaccines and a virus that continues to evolve is a reminder that while there have been some successes, it is essential to remain vigilant to what may come next.

### ARTICLE INFORMATION

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