

## Understanding the History, Impact and Challenges of Vaccination during a Global Pandemic

Preventing an estimated 3 million deaths worldwide every year, vaccinations are considered one of the best disease prevention achievements in medical history. Vaccine development and administration are at the center of the fight against the COVID-19 pandemic, in which we have lost a 2.4 million lives and counting worldwide. To better understand the importance of (and challenges to) COVID-19 vaccination, we must learn from our past experiences with vaccines.

The history of vaccination formally began in 1798, when Edward Jenner introduced a vaccine to protect healthy subjects against smallpox. Two other landmark vaccines were those against tuberculosis and polio infections. Fast forward to more recent times, in 2009 the U.S. rolled out a new nationwide vaccine in response to the H1N1 flu pandemic. Although there are vast differences between the flu strain and the novel coronavirus, the experiences of H1N1 vaccination offer many lessons for the challenges we face today in COVID-19 vaccination.

Although the development of the COVID-19 vaccine has been deemed a major success, the science of vaccine development is only half the problem. Ultimately, for vaccines to work they have to be administered. There are a variety of challenges posed by vaccine distribution and administration, especially for a population as large and diverse as the U.S. For example, the public health effort to develop and distribute a safe and effective H1N1 vaccination campaign faced many challenges including: public communication issues about H1N1 vaccine availability and eligibility, vaccine shortages, and concerns about H1N1 vaccine safety.

Another challenge to nation-wide vaccinations is “vaccine hesitancy” which encompasses a spectrum of feelings of doubt and opposition to vaccination. Religious objections to Jenner’s smallpox vaccine sprang up immediately from those who argued that it defied the will of God to determine life and death. Today, the conversation of vaccine hesitancy highlights structural and historical inequalities in healthcare that result in hesitant feelings towards vaccines in many communities. Lack of care and unethical research, such as the Tuskegee experiment, has led many people of color-especially Black Americans- to be skeptical of vaccination. However, vaccine hesitancy is a global concern. During the current pandemic, the World Health Organization listed vaccine hesitancy as one of their top ten threats to global health.

With two novel COVID-19 vaccines approved at the end of 2020, and others to likely be approved soon, vaccination has increasingly given hope to many. However, like other vaccinations in history, COVID-19 vaccination has faced many challenges. In addition to logistical issues, such as low supply and unequal distribution, vaccine hesitancy is a serious hurdle to vaccine administration, as many Americans still have concerns, questions and suspicions about the vaccine. Learning from our past experiences with vaccination will be critical to successfully administering COVID-19 vaccines and overcoming the pandemic.

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Information gathered from “History Shows Americans Have Always Been Wary of Vaccines,” *Smithsonian Magazine* ([www.smithsonianmag.org](http://www.smithsonianmag.org)); “Why vaccination is safe and important,” National Health Service ([www.nhs.uk](http://www.nhs.uk)); Michael Fraser’s “Lessons Relearned? H1N1, COVID-19, and Vaccination Planning” in *Journal of Public Health Management and Practice*, vol. 27, 2021; Laura Spinney’s “Could understanding the history of anti-vaccine sentiment help us overcome it?” in *The Guardian*, January 26, 2021 and Martin James Frigaard’s “Vaccines” in *Worldmark Global Health and Medicine Issues*, edited by K. Lee Lerner. Gale, 2016.