



Content on this page was developed during the 2009-2010 H1N1 pandemic and *has not been updated*.

- **The H1N1 virus that caused that pandemic is now a regular human flu virus and continues to circulate seasonally worldwide.**
- **The English language content on this website is being archived for *historic and reference purposes only*.**
- **For current, updated information on seasonal flu, including information about H1N1, see the CDC Seasonal Flu website (<http://www.cdc.gov/flu/>).**

H1N1 Presentation for Immunization Update 2010

Anne Schuchat, MD
Recorded 27 July 2010

Annual epidemics of influenza require the concerted efforts of clinicians, public health and vaccine manufacturers. The influenza pandemic of 2009 posed challenges unprecedented in recent years. In this presentation I would like to summarize the 2009 influenza pandemic and our collective response to it, as well as discuss key lessons we are learning for future action. The public health system detected and quickly characterized the emergence of pandemic H1N1 influenza. We were able to quickly define its epidemiology, and to estimate the burden of pandemic H1N1 disease in the United States. Our response prevented substantial illness, death, and both economic and social disruption through access and use of antiviral medicines, science-based guidance and recommendations. A comprehensive vaccination effort resulted in tens of millions of Americans, especially children, being protected from this new virus. CDC scientists were the first to detect the emergence of a novel influenza virus in April 2009.

The virus was first identified from two children in Southern California who suffered from mild respiratory illnesses. We soon learned that cases of more severe respiratory disease in Mexico were caused by the same virus. CDC promptly shared viral sequences, reagents, and candidate virus strains to speed the medical and manufacturing response. We shipped reagents to laboratories in over 100 countries as well as to public health laboratories throughout the United States. Field investigations identified population groups who were at higher risk for disease and severe outcomes, and found that risk groups experienced 60 percent to 75 percent of all severe disease. CDC estimates that pandemic H1N1 influenza virus caused more than 60 million Americans to become ill, and led to over 270,000 hospitalizations as well as nearly 12,500 deaths. Ninety percent of hospitalizations and deaths occurred in people under 65 years of age, a pattern very different to what we see with seasonal influenza, where about 90% of deaths occur in those older than 65. We rapidly developed, updated, and strengthened public health guidance and medical tools.

Working together with state and local public health and the clinical community, we quickly intensified epidemiologic, clinical and virologic surveillance. We encouraged the use of antiviral medications, including by emergency use authorization, to reduce complications of infection. This involved shipping portions of the Strategic National Stockpile to fill gaps in the commercial supply chain and to assure availability for people who had limited access to treatment. In late July 2009, the Advisory Committee on Immunization Practices – ACIP – formulated pandemic H1N1 influenza vaccine recommendations. This guidance identified target groups for initial focus when vaccine supply was limited. The target populations were those most likely to develop illness or spread infection, as well as those who accounted

for the majority of severe illness and death. We also implemented a vaccine distribution system for H1N1 vaccine through expansion of the centralized distribution that is used for the Vaccines for Children program. Manufacturers, government, and the academic community developed, tested, and made available a safe pandemic flu vaccine as fast as existing manufacturing technologies would enable. Monovalent pandemic influenza vaccines from 5 manufacturers were developed, tested, and licensed in record time – with doses available for use within 6 months of discovery of the new virus. Manufacturers and the NIH's network of Vaccine Treatment and Evaluation Units rapidly conducted clinical trials which determined a single dose of H1N1 vaccine protected most people. Only those under 10 years required two doses. Public health authorities supported school and community-based mass vaccination efforts.

Forty of 54 CDC grantees carried out school-located vaccination for H1N1 vaccine. About a third of children who were vaccinated got immunized at school-based clinics. The national effort was an unprecedented public-private emergency vaccination program. More than 90 million doses of pandemic H1N1 vaccine were given to about 80 million people. We monitored vaccine safety through enhancements and expansions of established vaccine safety systems, in order to ensure open, transparent review of potential health problems. We reported frequently on the system's findings – which revealed that monovalent H1N1 vaccine had a safety pattern very similar to seasonal influenza vaccines. The response entailed extensive, ongoing collaboration, communication and coordination. Our public health system collaborated to support local, state, national and global monitoring, response, and prevention efforts. Public health authorities coordinated the efficient private sector delivery of 2009 H1N1 vaccine. Vaccine was eventually available at doctor's offices, hospitals, health departments, occupational clinics, and large retail pharmacies as well as national chain stores. From the inception we tried to keep the public, media, stakeholders, partners and government leaders regularly updated and well informed about the pandemic and prevention measures. USE TAKE 2 National, state, and local spokespersons held frequent media briefings.

The Department of Health and Human Services supported a comprehensive website – Flu.gov – as well as a broad public service campaign. These collective efforts prevented disease, death, and disruption with available interventions and also strengthened the nation's capacity to respond. We found high public awareness and adoption of public health recommendations. People were reminded to cover their coughs, wash hands frequently, and stay home from work or school when they were ill. There was substantial demand for vaccine in many areas around the country, particularly early in the program and among groups like pregnant women who had previously been reluctant to be vaccinated. We tried to sustain trust in the public health system and were heartened when one national poll reported that a majority of adults rated the overall response to the H1N1 outbreak as excellent or good. We sought to learn throughout the response. Our updated guidance helped to keep schools and work places open, enabling children to continue to learn and adults to continue to work, despite much illness in the community. Was everything perfect? Of course not. There are many areas where we need to learn lessons so that future responses can be more effective. We need to build on efforts to strengthen the global capacity to rapidly recognize emergence of new influenza strains and other emerging infectious diseases.

Confirmation of the new strain in Mexico just a few weeks earlier could have meant large amounts of vaccine might have been available before disease peaked in much of the country. Even though we had been investing in new vaccine development research before the pandemic, such techniques had not yet come to fruition. The government is reaffirming our interest in investments in new technologies for influenza vaccine production. Although egg-based technology is tried and true, it relies on inherently difficult and time-consuming methods. We can work to improve this process, through modernizing approaches to potency testing of vaccine as well as seeking better ways to find rapid growing vaccine candidate strains. We also need to invest in new molecular technologies for influenza vaccine production. We need to move away from the reliance on methods that must grow the virus and use approaches that are more certain to produce large amounts of vaccine rapidly. Additional areas for improvement include

communication and trust building with minority populations. Rates of severe disease were higher in some minority populations, and vaccine acceptance rates lower. We also need to find more successful ways to motivate adults with chronic medical conditions to seek influenza vaccine. This is an issue for both pandemic and seasonal influenza vaccination efforts. We have much room for improvement in increasing the role that health care personnel play – both in receiving influenza vaccine to protect themselves and their patients, and in recommending flu vaccine for their patients. There are some myths to overcome – for example nasal spray influenza vaccine has not yet been well accepted among health care personnel despite it being recommended for any healthy child or adult between the ages of 2 and 49 years.

An important final lesson to learn is to try to avoid predictions. Influenza is unpredictable and so is influenza vaccine production. Although we had carried out pandemic planning with the expectation that vaccine would be scarce, especially at the beginning of vaccination efforts, the reality of vaccine demand exceeding supply was very challenging for public health, clinicians, and the public to manage. Although we signaled there may be bumps in the road as we instituted the vaccine program, projections of ample vaccine supply left many surprised when it proved difficult to find vaccine in the initial phases of the vaccination program. The response to the 2009 influenza pandemic took a huge collective effort at local, state, and national levels of government and across both private and public sectors. Years of pandemic planning paid off, but we are not done yet. Ongoing preparedness planning is needed – particularly in the area of vaccine distribution and logistics. The US experience offers an incredible opportunity to learn what worked best in reaching communities' needs. We look forward to working with you as we not only critically examine the response to the 2009 influenza pandemic, but also prepare for the NEXT pandemic. Unfortunately, we DO expect more pandemics in the future, and the next one will undoubtedly be different than this recent experience. We can also do better year in and year out in preventing illness, death, and disruption from seasonal flu. So our work is not finished. But it is a good time to stop for a moment and reflect.

As I look back on the past year, I am left with an enormous sense of gratitude. On behalf of my colleagues at the Centers for Disease Control and Prevention and across the Department of Health and Human Services, I sincerely thank you for your own hard work on the first pandemic of the twenty first century.

Centers for Disease Control and Prevention 1600 Clifton Road Atlanta, GA 30329-4027,
USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - [Contact CDC-INFO](#)

