

# Pandemic H1N1 Experience

---

The 2009 H1N1 pandemic in USA resulted in approximately 43 million to 89 million cases, 195,000 to 403,000 hospitalizations, and 8,900 to 18,300 deaths, including 910 to 1,880 deaths among children.

The pH1N1 influenza virus contained a combination of gene segments that had not been previously reported in animals or humans. The early serologic data suggested that many older adults had some cross-reactive immunity to the pH1N1 due to prior infection with antigenically related strains, while children and most young adults were immunologically naive.

In the United States, the pandemic was characterized by two distinct waves: first, April through July 2009, and the second, from August 2009 to February 2010. Within 1 week of the recognition of the nation's first case, 10 cases had been confirmed in 3 states signaling onset of a first wave. Consistent with early serological data, the majority of reported cases were in people  $\leq 24$  years of age, and only 1 % of cases were in individuals  $\geq 65$  years of age.

The signs and symptoms reported among the pH1N1 cases were similar to those observed in patients with seasonal influenza, with the exception of diarrhea which was more common in pandemic patients. Unlike seasonal influenza when hospitalizations are more common among persons over 65 years of age, the majority ( $>70\%$ ) of pH1N1 hospitalizations were in people younger than 50 years of age, with hospitalization rates highest in 0-4 year-old group. The majority of adults and children hospitalized with pH1N1 infections had at least 1 underlying medical condition, and 20-25% of all hospitalized people required ICU admission.

The age distribution of laboratory-confirmed pH1N1 influenza-associated death rate was also markedly different from that seen in typical influenza seasons. In contrast to typical influenza seasons, when 90% of deaths occur in the elderly population, over 80% of reported pH1N1 deaths were in persons younger than 65 years of age. Reported pediatric deaths from the pH1N1 were almost 4 times higher compared to death rate during the seasonal influenza. Pregnant women were more than 4 times more likely to be hospitalized with pH1N1; estimated 5.8% of all deaths from pH1N1 were in pregnant women even though they comprise only 1% of the total population.

Epidemiological studies indicated that the virus was at the low end of transmissibility, compared with the strains that caused the 1918 pandemic, and was comparable to or slightly less transmissible than the strains that caused the 1957 and 1968 pandemics. On average, there were 1.5 secondary cases per one person with pH1N1.

The CDC estimated that, from April 2009 through March 2010, pH1N1 virus was associated with about 60 million cases, 270,000 hospitalizations, and 12,270 deaths in the USA. This estimate represents a cumulative pH1N1 attack rate in the United States of approximately 20%.

In conclusion, the H1N1 pandemic experience showed that disease estimates were substantially lower than envisioned in the pandemic preparedness planning assumptions. Although the overall health impact was less than predicted in the elderly population, the impact of pH1N1 virus infection in children, young adults, and pregnant women was substantial.