

The Global Spread of 2009 H1N1 Influenza: A False Pandemic?

Teh-Ia Huo*

Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, R.O.C.

A novel 2009 influenza A (H1N1) virus, which began its spread in Mexico, was raised to global prominence in April 2009 due to its high mortality rate, and the World Health Organization declared the first influenza pandemic in June 2009.¹ The history of influenza pandemics include outbreaks recorded in 1918 (Spanish flu), 1957 (Asian flu), and 1968 (Hong Kong flu). It is estimated that the cycle of influenza pandemics occurs every 30–50 years. An early finding suggested that the mortality rate caused by the novel H1N1 influenza virus is less than that of the 1918 outbreak but comparable to that of the 1957 outbreak.² Although several antiviral agents, such as oseltamivir (Tamiflu) and zanamivir (Relenza), are available, the best way to prevent the disease is to have an effective vaccine.³ Most recent studies have indicated that a single 15- μ g dose of 2009 H1N1 vaccine is immunogenic, defined as antibody titers of 1:40 or more by hemagglutination-inhibition assay, in 89–95% of adults and in 92–97% of infants and children, with mild-to-moderate vaccine-associated reactions.^{4,5}

Given the successful initial results of the vaccination strategy against the H1N1 influenza virus, several critical issues remain unexplored. The major concerns of using a new vaccine against a specific infectious disease include the safety, immunogenicity and efficacy of the vaccine. The health authority in Taiwan began the H1N1 mass vaccination program in November 2009. However, information regarding important vaccine-related issues has not been fully disclosed to the public. Quite a few deaths have occurred after the injection of the H1N1 vaccine. Although a direct causal relationship between the vaccine and mortality cannot be firmly established, the safety of the vaccine has become a serious concern in Taiwan. In addition, since the presentation of H1N1 influenza could be subclinical, the prevalence rate of the infection and

baseline antibody titers against H1N1 influenza among susceptible hosts are largely unknown. This information is crucial because the efficacy of the protective ability of the vaccine needs to be demonstrated, and the vaccination may not be needed in already-infected subjects. Moreover, certain risk groups, such as hospital personnel, may have a higher risk of contracting H1N1 infection because of more frequent contact with patients. Subjects who have acquired antibodies to the H1N1 virus without vaccination are likely to be exposed to unnecessary risks of vaccine-associated adverse events if they are subsequently vaccinated.

The Taipei Veterans General Hospital (TVGH), which has 2,900 beds for hospitalization and a capacity of 8,000–10,000 outpatients daily, is the major teaching hospital in Taiwan. Our hospital provides primary to tertiary medical care to the residents of northern Taiwan, an area of 11 million inhabitants. According to a recent internal survey from the Infection Control Unit of TVGH during the period between August 24, 2009 and January 11, 2010, 1,850 (20.7%) of 8,928 patients (including in- and outpatients) who underwent a rapid point-of-care testing had influenza A. Our data are consistent with those of another study from Spain.⁶ During the same period of time, 35 hospital staff were confirmed to have influenza A; all of them recovered uneventfully after supportive treatment. This large number of infected subjects indicates that hospital staff are invariably exposed to a highly infectious environment. In this issue of the *Journal of the Chinese Medical Association*, Chan et al⁷ analyzed the seropositive rate of H1N1 virus in the medical personnel of TVGH. Strikingly, the seropositive rate of the H1N1 influenza virus was 20%, which was significantly higher than that in the general population (2.9%). Subgroup analysis showed that among the medical personnel, the rate was higher in the medical



*Correspondence to: Dr Teh-Ia Huo, Department of Medicine, Taipei Veterans General Hospital, 201, Section 2, Shih-Pai Road, Taipei 112, Taiwan, R.O.C.
E-mail: tihuo@vghtpe.gov.tw • Received: January 15, 2010 • Accepted: January 22, 2010

staff and nurses from the Department of Infectious Disease, Emergency Room and inpatient wards (30.8%) than in laboratory and administrative staff (12.6%). These data show that an amazingly high proportion of hospital staff have previously been infected by the H1N1 influenza virus, and imply that the hospital itself is a potential incubator of the H1N1 virus. These results also raise a concern that susceptible subjects, especially high-risk groups such as medical personnel, need to undergo baseline antibody titer measurement before vaccination.

Different countries have different vaccination policies against H1N1 influenza infection. In the United States, although no substantial differences between H1N1 and seasonal influenza vaccines were noted in the proportion or types of serious adverse events reported,⁸ many people in Taiwan are still reluctant to undergo a free flu shot. The hindrance to the H1N1 vaccination program in Taiwan could be attributed to the uncertainties and potentially serious side effects of this new vaccine. Although the initial mortality rate of the H1N1 influenza virus in Mexico appeared alarmingly high, subsequent reports from other countries did not show consistent results. More and more evidence suggest that the novel H1N1 influenza could only be an average seasonal flu that does not induce particularly high mortality rates. In addition, whether the current vaccination policy will generate undue benefit to the vaccine-producing pharmaceutical companies is another issue of concern. An emergency debate on this issue is ongoing by the Council of Europe. Although we cannot infer that the H1N1 outbreak in 2009 was a false alarm at this point in time, the story of influenza pandemics will repeat itself and thus more detailed epidemiological,

clinical and laboratory information should be gathered and inspected during each outbreak before public resources and money are spent on a massive scale. The vaccination strategy needs to be re-evaluated in the hopes of further minimizing unnecessary risks and frequency of severe vaccine-associated adverse events.

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