## Afterword

Jeffery L <u>Cutter</u>, <sup>1</sup>MMed (PH), MSc (Epidemiol), FAMS

My first involvement with pandemic influenza preparedness planning began in January 2004, when I attended an urgent meeting organised by the Ministry of Public Health in Thailand in response to infections caused by the influenza A (H5N1) avian virus. A number of countries together with the World Health Organization (WHO) attended that meeting as well. As the number of human cases caused by avian influenza A (H5N1) continued to rise in Thailand and Vietnam, there was a high level of concern that it may lead to a new influenza pandemic. All that was needed for a pandemic to occur was a genetic mutation in the H5N1 virus that would enable efficient human-to-human transmission. With mortality rates from H5N1 infection exceeding 50%, there was an urgent scramble to establish national pandemic influenza preparedness plans around the world. MOH subsequently published the first version of Singapore's Influenza Pandemic Preparedness and Response plan on the MOH website in June 2005.1 This was followed by the publication of Singapore's overall national influenza pandemic plan published by the Ministry of Home Affairs (MHA) in January 2009.<sup>2</sup> MHA coordinates Singapore's whole-of-Government preparedness planning for national crises such as influenza pandemics.

I am thankful and greatly relieved that the first influenza pandemic of the 21st century has been so far much milder than what we envisaged in our pandemic planning. For example, MOH was planning for over 13,500 hospital admissions and over 2,200 deaths based on a 25% attack rate in the latest version of the Influenza Pandemic Readiness and Response Plan (January 2009).<sup>3</sup> The actual experience in Singapore about a month after the end of the first pandemic wave (i.e. end-September 2009) was just about 10% of the expected hospital admissions and just 1% of the expected deaths. If the planning assumptions had come true, the healthcare system may have been overwhelmed and there may have been widespread panic. Social distancing measures such as the closing of all schools, public entertainment venues (eg. cinemas) and cancellation of public events would have been implemented as planned. Imagine 2009 without the Asian Youth Games, National Day Parade and F1.

There was no assurance however that the pandemic would be mild when we first heard about the outbreak in Mexico on 24 April 2009. The first report from WHO then stated that there were over 850 cases of pneumonia in hospitals with 59 deaths in the Mexico City area. WHO also said that the majority of these cases had occurred in otherwise healthy young adults.<sup>4</sup> I remember thinking to myself whether this would be similar in severity to the 1918 pandemic which was also caused by a H1N1 strain and where many healthy young adults succumbed to the infection. Although we had been preparing for a flu pandemic for some time, I recall being filled with a sense of dread and anxiety.

Will the H1N1 pandemic remain mild? Many countries in the northern hemisphere have already started experiencing a second wave of H1N1 infections. For most, it is an early start to their winter flu season. So far (up to early December 2009), there has been no indication of the H1N1 turning more virulent. Reports that surfaced from Ukraine at the end of October 2009 of a large number of cases of influenza-like illness, including a number who required intensive care turned out to be a false alarm.<sup>5-7</sup> It is difficult to predict whether H1N1 will become more virulent in the future. A multinational analysis of the last pandemic in 1968 showed different epidemic patterns in the six countries studied. In the United States, a large epidemic was observed in 1968/1969, followed by a milder one in 1969/1970, late in the winter season. In Canada, the two epidemics in 1968/1969 and 1969/1970 were similar in amplitude and timing. However, in other countries (Australia, France, UK and Japan), the first epidemic in 1968/1969 was mild, followed by a much more intense epidemic in the next season in 1969/1970.8

In Singapore, there were no reports of a more virulent second wave after the 1957 and 1968 pandemics. A second wave is expected to occur in January 2010 with the reopening of schools after a 6 to 7-week long school vacation. In past years, a rise in influenza activity in January has been a regular phenomenon in Singapore. The availability of H1N1 vaccines to adults from early November 2009, to children aged 10 to 18 years from the last week of November 2009 and to children aged 6 months to 10 years from early December 2009 should reduce the size of the expected outbreak in January 2010. This will however depend on the uptake of the vaccine by the population. The Ministry of Health should ensure that this happens.

Whether the H1N1 pandemic will turn virulent or not, preparedness measures remain in place in Singapore. There

<sup>&</sup>lt;sup>1</sup> Communicable Diseases Division, Ministry of Health, Singapore

Address for Correspondence: Dr Jeffery Cutter, Communicable Diseases Division, Ministry of Health, College of Medicine Building, 16 College Road, Singapore 169854.

Email: Jeffery\_cutter@moh.gov.sg

is a healthy stockpile of both oseltamivir and zanamivir as well as personal protective equipment like N95 respirators. Healthcare workers will do well to remain vigilant against influenza by maintaining high standards of infection control. The public should also do their part by getting vaccinated against H1N1 especially if they are in the high-risk groups and maintaining good hygiene habits and strong social responsibility.

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