Influenza Pandemic Preparedness: Implications to Hospitals and Healthcare Personnel

The current outbreak of avian influenza in Southeast Asia is a major human health concern. The H5N1 influenza A virus, in addition to infecting birds, can also infect mammals and human, with very high mortality rate. Although the number of human cases of the avian influenza is still low and there is no sustainable human-to-human transmission. A concern that the virus may further mutate or reassort with human influenza viruses and generate a highly virulent influenza virus that can spread from human to human is eminent. This will result in a global spread of the deadly strain of influenza virus - the influenza pandemic.

There were at least 3 major influenza pandemics in the 20th Century: Spanish flu in 1918-1919, Asian flu in 1957-1958 and Hong Kong flu in 1968-1969. The previous influenza pandemics caused high morbidity and mortality, and led to social disruption and economic loss. For example, it is estimated that about 40-50 million people around the world died from Spanish flu, the number far higher than the total death directly from the First World War. The outbreak of H5N1 virus has brought the world closer to an influenza pandemic than any time since the Hong Kong flu. Thailand is among a few possible epicenter of this pandemic. With the recent advances in medical science and improvement of public health system, the world has received a warning message of the impending pandemics and we should be better prepared than in the previous outbreaks.

It is however estimated that the next influenza pandemic, if occurs, will be devastating. The virus could spread worldwide within months. In the pandemics, about 1,200-3,600 million people will become ill, 900-1,600 million will require medical treatment and 6-28 million will require hospitalization. The mortality may be in the range of 2-7.4 million people globally. All of this will occur within a span of less that a year. The number of patients alone will overload healthcare facilities and cause disruption of the system.

The World Health Organization (WHO) has developed an Influenza Pandemic Preparedness Plan, which defines the responsibilities of WHO and national health authorities in case of an influenza pandemic. The plan is constantly being updated to incorporate the growing epidemiologic and scientific information learned during the current outbreak of avian influenza in Asia.[1] WHO has urged each country to develop the national influenza pandemic preparedness plan. Several countries have completed the development of the plan and are implementing it according to the local context. Thailand has drafted the plan.

Hospitals and healthcare personnel especially doctors and nurses, will play an important role in the influenza pandemic. Before pandemic starts, hospitals will have to be alerted of the first cases of suspected avian influenza. In the pandemic, the most of the out-patients and in-patients may be infected with influenza virus. WHO estimates that if an influenza pandemic appears, we could expect that the virus will spread rapidly, leaving little or no time to prepare. Vaccines, antivirals and antibiotics to treat secondary infections will be in short supply and is likely to be unequally distributed. It will take about 6 months before a vaccine that can protect against the pandemic virus becomes available. Medical facilities will be overwhelmed due to a large number of patients. In addition, many healthcare workers may also become ill, causing significant shortage of doctors and nurses. They are at risk of infection due to both the contact in the community and during providing care to the patients.[2]

Hospital administration should be prepared for this situation. Contingency plan should be developed and rehearsed. Healthcare personnel must also be prepared and well aware of the situation. Some countries have developed recommendations to handle the situation. For examples, the United States Centers for Disease Control and Prevention (US CDC) has provided an interim recommendations for infection control in healthcare facilities caring for patients with known or suspected avian influenza. The recommendation is based on optimal precautions for protecting healthcare personnel caring for patients and is also aimed to prevent the reassortment of avian and human influenza viruses resulting in the pandemic strain.[3]

Standard precautions plus droplet precautions are recommended. However, additional precaution may be needed due to the uncertainty of the mode of transmission of the potential pandemic virus. Methods for screening of suspected cases should be implemented. The current US CDC interim recommendation for caring of human cases of avian influenza include

- Standard precaution including hand hygiene before and after all patient contacts
- Contact precautions by wearing gloves and gown, and using dedicated medical equipment
- Eye protection by using goggles and face shields
- Airborne precautions by placing the patients in an airborne isolation room.

In addition, it is recommended that healthcare personnel involved in the care of the avian influenza patients should be vaccinated with the most recent seasonal human influenza vaccine. Those personnel should be monitored for any illness for 1 week after the last exposure to the patients.

Influenza pandemic is major global threat. The chance that the pandemic will occur soon has sent a warning message to the world community, to each country and each healthcare facility. On the other hand, the warning also provide an unprecedented opportunity to prepare for the pandemic. Hopefully, the world will be better prepared for influenza pandemic than in the previous events, and that the result will be less devastating.

REFERENCES

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