

### EPIDEMIC AND PANDEMIC PUBLIC HEALTH EMERGENCIES

A pandemic is a global disease outbreak. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. The disease spreads easily person-to-person, causes serious illness, and can sweep across the country and around the world in a very short time. Contrast pandemics with seasonal outbreaks or “epidemics” of influenza. Flu virus subtypes that already exist in a population typically cause epidemics. Pandemics are caused by new subtypes or by subtypes that have never circulated among people or that have not circulated among people for a long time. Previous flu pandemics have led to massive casualties, social disruption, and economic loss.

- 1918-1919 “Spanish flu” [A9H1N1] – This caused the highest number of recorded influenza deaths. More than 500,000 people died in the U.S., and up to 50 Million people may have died worldwide. This virus still circulates today after being introduced again into the human population in the 1970’s.
- 1957-58 “Asian flu” [A(H2N2)] – First identified in China in late February 1957, Asian Flu spread to the U.S. by June 1957 and caused about 70,000 deaths here.
- 1968-69 “Hong Kong flu” [A(H3N2)] - First detected in Hong Kong in early 1968, it caused about 34,000 deaths in the U.S. Influenza A (H3N2) viruses still circulate today.

Health professionals are concerned that the continued spread of a highly pathogenic avian H5N1 virus across eastern Asia and other countries represents a significant threat to human health. The H5N1 virus has raised concerns about a potential human pandemic because:

1. It is especially virulent
2. It is being spread by migratory birds
3. It can be transmitted from birds to mammals and in some limited circumstances to humans, and
4. Like other influenza viruses, it continues to evolve.

Since 2003, a growing number of human H5N1 cases have been reported in Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Lao Democratic People's Republic, Nigeria, Thailand, Turkey, and Vietnam. More than half of the people infected with the H5N1 virus have died. Most of these cases are all believed to have been caused by exposure to infected poultry. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission. According to the Center for Disease Control the next influenza pandemic in the United States could result in 89,000 to 207,000 deaths, 314,000 to 734,000 hospitalizations, and 18 to 42 million outpatient visits, with a direct economic effect between US \$71 and \$166 billion, according to 1 set of estimates.

### How Are We Preparing for the Next Pandemic?

The U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) have large surveillance programs to monitor and detect influenza activity around the world, including possible pandemic strains of influenza virus. The WHO has developed a global influenza preparedness plan which can be viewed at

[www.who.int/csr/resources/publications/influenza/WHO\\_CDS\\_CSR\\_GIP\\_2005\\_5.pdf](http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5.pdf).

The U. S. Department of Health and Human Services (HHS) supports pandemic influenza activities in the areas of surveillance (“detection”), vaccine development and production, antiviral stockpiling, research, and public health preparedness. In addition, HHS issued a draft National Pandemic Influenza Preparedness Plan in August 2004. For more details on pandemic influenza, visit the HHS web site at <http://www.dhhs.gov/nvpo/pandemics/>.

Influenza Pandemics differ from other threats for which public health and healthcare systems are currently planning in that pandemics can last much longer than most other emergencies and may include waves of influenza activity separated by months; the numbers of healthcare workers and first responders available to work could be reduced because they are at a high risk of illness through exposure in various settings, and they could be off to care for family members; and resources in many locations could be strained considering how wide spread the pandemic would be.

CDC is involved in several pandemic prevention and preparedness activities, including:

1. Working with the Council of State and Territorial Epidemiologists and others to help states and their county Health Department counterparts with their pandemic planning efforts;
2. Working with the Association of Public Health Laboratories on training workshops for state laboratories on the use of special laboratory (molecular) techniques to identify H5 viruses;

3. Working with other agencies such as the Department of Defense and the Veterans Administration on antiviral stockpile issues;
  4. Working with the WHO and Vietnamese Ministry of Health to investigate H5N1 in Vietnam and to assist in laboratory diagnostics and training local authorities;
  5. Performing laboratory testing of H5N1 viruses;
  6. Starting a \$5.5 million initiative to improve influenza surveillance in Asia;
  7. Involvement in training sessions to improve local capabilities to conduct surveillance for possible human cases of H5N1 and to detect influenza A H5 viruses via laboratory techniques;
  8. Developing and distributing reagents kits to detect existing influenza A H5N1 viruses;
  9. Collaborating with WHO and the National Institutes of Health (NIH) on safety testing of vaccine seed candidates and to develop additional vaccine virus seed candidates for influenza A (H5N1) and other subtypes of influenza A viruses, and,
10. The U.S. Department of Health & Human Services through CDC has provided funding to the State and County Health Departments and others for prevention and preparedness planning and personnel, training, exercise and other activities, facilities and equipment