



Testimony  
**BEFORE THE**  
**COMMITTEE ON COMMERCE, SCIENCE, AND**  
**TRANSPORTATION**  
Subcommittee on Trade, Tourism and Economic  
Development  
**UNITED STATES SENATE**

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**Avian Influenza A (H5N1): Update and  
Preparedness Actions Related to  
Tourism and Trade**

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Mr. Chairman and members of the Subcommittee, I am pleased to be here today to provide an update on the potential for an influenza pandemic and to give you a status of public health preparedness, specifically related to travel and trade issues. Although most of my testimony will focus on the current threat of avian influenza A (H5N1), it is important to keep in mind that a pandemic could emerge from other influenza strains and that continued national and global vigilance is essential. The Department of Health and Human Services (HHS) and its Centers for Disease Control and Prevention (CDC) are leaders in this effort, working in close partnership with colleagues from the Departments of Commerce, State, Agriculture, and Homeland Security, state and local leaders, and many other organizations in the United States and throughout the world.

### **The Current Status of H5N1 Influenza Virus**

Highly pathogenic avian influenza A (H5N1) virus infection in both animals and humans has spread significantly since the beginning of 2006. As of June 21, 2006, the World Organisation for Animal Health (OIE) had received reports of infections in millions of domestic poultry and wild birds in more than 50 countries in Asia, the Middle East, Africa, and Europe. As of June 21, the World Health Organization (WHO) had confirmed human cases of H5N1 influenza in 10 countries: Azerbaijan, Cambodia, China, Djibouti, Egypt, Indonesia, Iraq, Thailand, Turkey, and Vietnam. As of June 21, WHO had confirmed a total of more than 225 human cases since January 2004, with an overall fatality rate of greater than 50 percent. Although almost all cases of human infection with the H5N1 virus appear to have resulted from some form of direct or close contact with infected poultry, some clusters indicate that the possibility of limited human-to-

human contact, particularly infection within family clusters, merits close attention. In addition, scientists at CDC, WHO, and other organizations have documented ongoing genetic changes in the virus. These changes have important implications for our preparedness efforts in developing influenza pandemic vaccine.

Despite the detection of some genetic changes, scientists have not yet observed fundamental changes in the virus's genetic structure that might allow H5N1 viruses to be transmitted more efficiently from person to person. If such changes were to occur, they would heighten our concern about the virus attaining the capacity for sustained, rapid human-to-human transmission, which is necessary for a pandemic to occur. What we have begun to see is an increasing number of situations where limited human-to-human spread may have occurred among family members who have had close contact with individuals infected with the virus.

Whether the H5N1 virus evolves into the next pandemic or a pandemic originates from another highly pathogenic influenza strain, continued preparedness is essential. Seasonal influenza causes about 200,000 hospitalizations and 36,000 deaths in the United States each year. In economic terms, seasonal influenza in the United States costs about \$37.5 billion annually in healthcare costs and lost productivity. Based on evidence from influenza pandemics in the 20th century, computer models, and other research, CDC estimates that a moderate influenza pandemic could cause about 865,000 hospitalizations and 209,000 deaths in the United States. A severe pandemic could cause an estimated 9.9 million hospitalizations and 1.9 million deaths in the United States. In addition, unlike

seasonal influenza, a pandemic could begin at any time of year and could seriously disrupt both domestic and global travel, trade, and other social and economic infrastructure for months or years. It is extremely difficult to calculate estimates of the economic impact a moderate or severe influenza pandemic may have on the United States or on other nations.

### **Comprehensive, Highly Collaborative Preparedness Planning**

CDC and scientific colleagues throughout the world generally agree that as the influenza virus continues to evolve, an influenza pandemic is likely at some point and could be extremely difficult to contain. The comprehensive, highly collaborative preparedness planning now underway is vital to minimize the impact of such an event. CDC plays a major role in executing public health strategies established by HHS and other departments. These strategies are focused on: ensuring early detection and reporting; a high capacity for laboratory and epidemiological investigations; containment and rapid responses to outbreaks; and sharing of and training on best practices to benefit from lessons learned as we move forward. Public health is one component of much broader preparedness planning founded on guidance from the World Health Organization and the President's *National Pandemic Influenza Preparedness Strategy*. CDC public health preparedness fits within the framework of the *National Strategy for Pandemic Influenza Implementation Plan* published on May 3, 2006, by the White House Homeland Security Council (HSC), ongoing coordination with the Department of Homeland Security (DHS) and the Department of State (DOS), and execution of strategies described in the *HHS Pandemic Influenza Preparedness Plan* released in November 2005. CDC and other HHS

agencies are finalizing and exercising their own internal operations plans in conjunction with the strategies, objectives, and performance measurements contained in overarching preparedness plans developed by HSC, DHS, HHS, and other departments and organizations.

### **Preparedness Measures Related to Trade and Travel Issues**

Using the Fiscal Year (FY) 2006 emergency supplemental funds that Congress appropriated to further public health preparedness for an influenza pandemic and its regularly appropriated funds, CDC has begun implementing key projects, many in partnership with other organizations. These projects are grouped broadly under the areas of increasing laboratory capacity and research, improving domestic and international surveillance, strengthening resources for containment and rapid response, and strengthening public communications activities. I will describe a few of the projects that relate most directly to trade and travel.

#### Laboratory Capacity and Research

The capacity on early detection and reporting of outbreaks caused by H5N1 and other highly pathogenic influenza viruses depends first on strong laboratory capacity and research. The results of these initiatives would have a major impact on travel and trade concerns.

- CDC, the National Institutes of Health (NIH) within HHS, and global partners such as WHO have made significant progress in monitoring changes in the H5N1 virus since they first caused human infections in 1997 and have continued to

develop pandemic influenza vaccine reference candidates. CDC and NIH are cooperatively testing candidate reference vaccines, including a series of pre-clinical and clinical trials to evaluate their safety and dosage requirements. The number of H5N1 vaccine doses on hand is calculated on the basis of different dosage requirements. Interested manufacturers are working closely to prepare limited quantities of these candidate vaccines. This research will be essential both to promptly identify an actual pandemic influenza strain that can be used to make an appropriate vaccine and to have manufacturing and other resources ready to test, produce, and distribute a pandemic vaccine as quickly as possible.

- CDC and its partners regularly monitor the effectiveness of antiviral medications that could be used to help with treatment during early and later stages of an influenza pandemic. Limited epidemiological evidence suggests that one group of antiviral medications, neuraminidase inhibitors, may be effective in fighting H5N1 virus infection when administered promptly and in sufficient quantities. No clinical evidence to date suggests that resistance in H5N1 viruses to neuraminidase inhibitors is present among viruses circulating in birds or untreated humans. Current neuraminidase inhibitors licensed for use in the United States are oseltamivir (Tamiflu™) and zanamivir (Relenza™). CDC works closely with several manufacturers to maintain these antiviral medications, along with other vital resources, in the U.S. strategic national stockpile, for distribution domestically when needed to high-risk priority groups. HHS, DOS, and the Department of Defense (DOD) also work together to help place strategic antiviral

- supplies in areas of the world where outbreaks are likely to happen, in an effort to contain early pandemic influenza outbreaks as closely as possible to their source.
- CDC has as one of its major responsibilities the development and testing of new rapid diagnostic tests. CDC distributes these tests to the domestic Laboratory Response Network (LRN) laboratories and to those the LRN certifies for use in making preliminary identifications of H5 viruses. This saves time in the diagnosis by allowing more efficient and rapid provisional diagnosis locally at the LRN labs, with CDC providing subsequent confirmatory testing in its BSL-3-enhanced laboratories. Since December 2005, CDC has made major advances in new rapid diagnostic tests and is now supplying diagnostic tests for H5N1 virus to LRN-certified laboratories. The FY 2006 Emergency Supplemental funds are making it possible for CDC to increase the pace of its research in this area.
  - CDC continually analyzes genetic sequence data as the H5N1 virus evolves and supplies viruses and the sequence data, in coordination with WHO and the countries of origin, to certified public and private scientific facilities in the United States and throughout the world.
  - HHS recently announced contracts to further both current egg-based vaccine development technology and novel, cell-based technology. The egg-based research will help scientists and manufacturers develop interim solutions that could be particularly important should a pandemic begin in the next one or two years. The new emphasis on cell-based research could advance a process to significantly increase the quantity of influenza vaccine produced during a similar amount of time as egg-based technology takes. Funding for both types of research

continues to be an essential component of the nation's comprehensive national pandemic influenza preparedness.

### Domestic and International Surveillance

Domestic and international surveillance networks are essential in analyzing and reporting on potential threats to travel and trade.

- CDC has worked with numerous partners since 1990 to strengthen its domestic surveillance network for seasonal influenza and other public health threats. Now, as part of the comprehensive *National Response Plan*, CDC continues to enhance this network and is facilitating active partnerships between states and private healthcare facilities, such as hospitals, that detect and report cases of suspected influenza infections. Although our role in this area is limited, it is essential that states and private healthcare facilities work together to build greater overall capacity to detect and report potential pandemic influenza outbreaks as quickly as possible. The system depends on strong, longstanding working relationships among many health professional groups, as well as on utilizing advances through technologies.
- International surveillance is equally critical in preparing for an influenza pandemic. CDC serves as one of the four WHO Global Collaborating Centers for Influenza. In this capacity, CDC plays a vital coordinating role in ongoing global surveillance of continually evolving influenza viruses. To strengthen its own international surveillance, CDC has invested for a number of years in country and regional training for many nations that now are directly affected by H5N1



influenza. With the help of FY 2006 Emergency Supplemental funds, CDC is establishing an on-ground regional presence with Global Disease Detection (GDD) Response Centers in five key global areas: Egypt, Guatemala, Kenya, Thailand, and PR China. This is part of CDC's efforts to strengthen global surveillance capacity by establishing a network of Global Disease Detection and Response Centers strategically placed in each of the six WHO regions. Each GDD Response Center will design and implement key interventions aimed at the early identification and containment of pandemic health threats, whether an act of terrorism or the natural emergence of a deadly infectious pathogen like pandemic influenza. To provide additional support internationally, the agency has enhanced collaborations with WHO regionally and in its Geneva headquarters and has made resources available bilaterally to 13 countries, with more targeted in the coming months. The agency also has posted expert influenza coordinators within three countries that have been hit by the H5N1 virus: Cambodia, Laos, and Vietnam. Posting additional influenza experts in countries and regions that have been hardest hit in recent months is a high priority of the agency. Within the federal government, CDC coordinates this and other efforts with DOS and DOD. In particular, the U.S. Naval Medical Research Units (NAMRU) in Indonesia and Egypt are playing a valuable role in prompt confirmatory testing of H5N1 samples from human cases.

- Surveillance of wild and migratory birds, as well as small and large flocks of poultry, has become increasingly important as the H5N1 virus has spread across continents. CDC is working in concert with many groups, including the Wildlife

Conservation Society, the Smithsonian Institution, the Department of Agriculture (USDA), the Department of the Interior (DOI), and international organizations such as the Food and Agriculture Organization of the United Nations and OIE to assure comprehensive global surveillance of poultry and migratory bird pathways, and in collaboration with federal partners to ensure the importation and exportation of healthy poultry and fowl.

### Containment and Rapid Response

Protection of travelers and integrity of safe trade depend on containment and rapid response actions. This is one of the most important areas in which CDC is strengthening its capacity.

- CDC is a leader in a USDA-coordinated multi-agency, scenario-based plan to help ensure a seamless response to the first animal and human outbreaks caused by H5N1 virus or other highly pathogenic influenza strains in the United States. A “playbook” of possible scenarios for first outbreaks has been developed, and CDC will participate with other agencies in conducting exercises with these scenarios in the coming months.
- Under the Security and Prosperity Partnership, CDC also works with our Canadian and Mexican neighbors on public health issues related to the detection and containment of influenza virus infection at our borders. CDC serves on a border working group that includes representatives from Canadian and Mexican public health departments to plan and implement border guidance.

- CDC regularly updates HHS regulations to prohibit the transfer of dangerous select agents into the United States. In the case of highly pathogenic influenza strains such as the H5N1 virus, CDC is acting quickly to prohibit entry of birds and bird-products from countries with confirmed or suspected cases.
- Using regularly appropriated funds and Supplemental Emergency funds from FY 2005 and FY 2006, CDC has significantly enhanced vital quarantine stations at key points of entry, which provide first line defense to detect and evaluate potentially infectious diseases arriving in the United States. Key roles for the quarantine stations include working in concert with state and local health departments and with other federal partners to address community mitigation of outbreaks due to highly contagious diseases, and preparing for influenza pandemics using 21<sup>st</sup> century approaches to traditional non-pharmaceutical interventions. These types of interventions include voluntary isolation and quarantine, social distancing, and infection control strategies. The partnerships are essential to prevent importation and interstate spread of communicable diseases through U.S. ports of entry and in ensuring a coordinated, effective response to emerging disease threats. Sixteen of these quarantine stations currently are in international airports across the United States, and two others are located at major points of entry across the southern land border; two additional stations are scheduled for opening by the end of Calendar Year 2006. Depending on resources, CDC plans to increase the number of quarantine stations to as many as 25 in FY 2007.

- Through \$350 million in FY 2006 Emergency Supplemental funding, CDC is administering HHS collaborative agreements with 62 grantees – 50 states, six U.S. territories, and six large metropolitan areas. The collaborative agreements are helping these grantees move forward on their preparedness efforts, including identification of potential gaps and carrying out exercises of components of their preparedness plans.
- CDC is working closely with partners at the Department of Labor and HHS to identify research gaps regarding personal protective equipment for use during an influenza pandemic and to update guidance for the public, first responders, and other health professionals. Developing effective guidance is a high-priority area that also is highly complex, requiring unified national guidance on use of masks, respirators, and other resources, as well as decisions about how to store, distribute, and replace these materials quickly during an influenza pandemic.
- CDC and other agencies also are developing practical guidance on non-pharmaceutical interventions that will be especially important during the early months of an influenza pandemic. This includes guidance for health-care facilities and general public infection control, social distancing practices, isolation procedures, criteria for school and business closures, and voluntary quarantine measures if necessary. Additionally, CDC is enhancing its research agenda around the effectiveness of various non-pharmaceutical interventions that will be necessary to mitigate the impact and contain a pandemic influenza virus internationally, at our borders and within communities in the United States.

## Communications

Travel and trade concerns are closely allied with the need for timely, accurate information for the public, health professionals, businesses, and other groups. HHS and CDC work closely together to provide a broad-based approach to public communications activities, including efforts that incorporate risk communications principles that will be essential when a pandemic occurs. This system of communications activities already is helping alert and educate the public, health professionals, authorities, and others about practical action to take in preparation for an influenza pandemic.

- The HHS [www.pandemicflu.gov](http://www.pandemicflu.gov) web site, the CDC Traveler's Health web section ([www.cdc.gov](http://www.cdc.gov)), the CDC Information Hotline, the Health Alert Network, and the Epi-X alert network are primary components of a multi-faceted public communications initiative.
- CDC and other agencies also collaborate with DHS on developing practical guidance for the private sector, educational institutions, and other priority groups preparing for a pandemic.
- HHS is nearing the end of a series of comprehensive state pandemic influenza planning summits across the country that have significantly raised awareness of the potential impact of an influenza pandemic. These summits have served in many cases as an initiative for new levels of contacts between the federal government and state and local preparedness groups. CDC has been a leader in each of these events and continues to follow-up with states, territories, and tribal leaders.

- From a communications perspective, the administration of the state and local collaborative agreements noted above provides a highly effective forum for CDC and grantees to communicate frequently, which helps to integrate effective risk communications principles into overall pandemic communications planning and activities.

## **Challenges**

Despite these important strides, our nation is not yet where we need to be in our public health preparedness for the next influenza pandemic. HHS has led advances in many areas that will contribute to a quick and effective response. CDC, NIH, the Food and Drug Administration, and other HHS agencies are committed to the best possible preparedness and response to an influenza pandemic. The advances we are making have resulted from three major factors: dedication to the highest science-based standards, a spirit and history of collaborative learning and action, and the necessary public and private support of required fiscal and human resources.

We face some significant challenges. A pandemic will require rapid response on many levels – from U.S. communities to areas across the world. Rapid outbreak response requires rapid detection, seamless reporting, prompt, transparent information sharing, and strong, ongoing core laboratory and research capacity. The next influenza pandemic is a multi-year threat that requires a multi-year approach to fiscal and human resources. This is particularly important as the federal government seeks ways to encourage ongoing involvement of partners such as vaccine manufacturers, as well as continued state and

local preparedness. Thank you for the opportunity to share this information with you. I am happy to answer your questions.