Avian and Pandemic Influenza

The Global Response

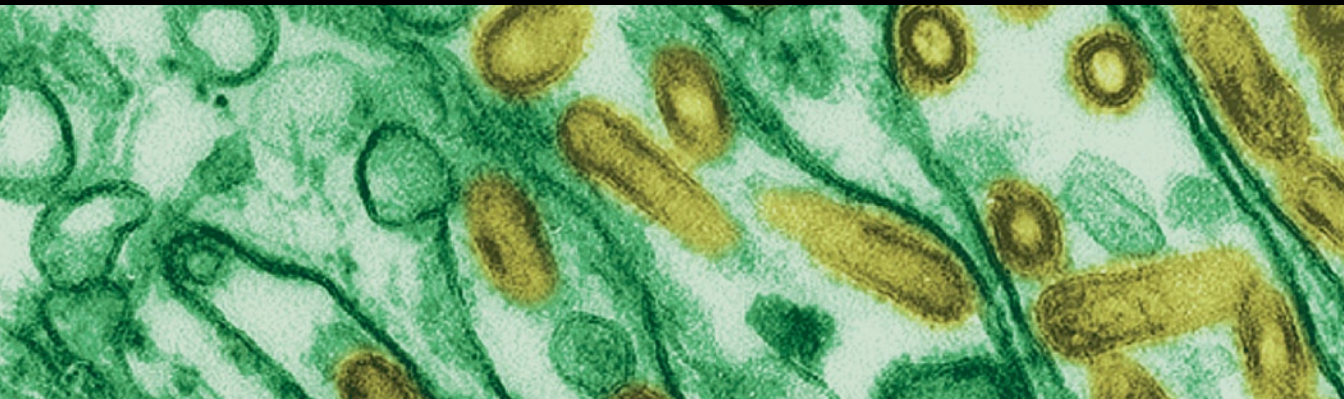


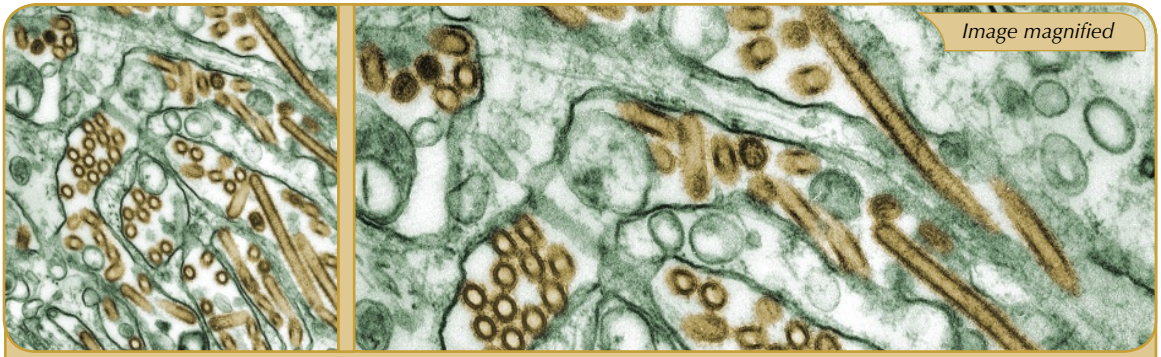
Table of Contents

Dr. Margaret Chan, Director-General, World Health Organization (WHO)

"Pandemic influenza is … looming on the horizon. The threat has by no means receded and we would be very unwise to let down our guard, or slacken our preparedness measures. As with climate change, all countries will be affected, though in a far more rapid and sweeping way."

– Dr. Margaret Chan, Director-General,
World Health Organization,
May 2008

Making History



CDC PHIL photo 1841, H5N1 colorized electron micrograph. (CDC)

In 1996, scientists isolated highly pathogenic H5N1 avian influenza virus from a farmed goose in Guangdong Province, China. The next year, in 1997, H5N1 outbreaks occurred in poultry at farms and live-animal markets in Hong Kong and – the first known human infections – in 18 people, six of whom died.

Six years later, in 2003, outbreaks among poultry occurred in the Republic of Korea and Thailand, and the virus began to spread. By mid-2008, H5N1 had killed and prompted the destruction of hundreds of millions of domesticated and wild birds in more than 60 countries, infected nearly 400 people in 15 countries, and killed over 60 percent of them.

Today around the world, governments, international and regional organizations and financial institutions, animal and human health experts, research institutions, emergency responders and many others have come together in an unprecedented way to bolster disease surveillance, outbreak assessment, preparedness, response and containment – and for the first time in history to ready nations in advance of a possible pandemic.

David Nabarro, U.N. System senior coordinator for avian and human influenza, with villagers. (United Nations)

"Countries are much better prepared now than they were a year ago for a pandemic; however, the preparedness is not as broad or deep as we would like it to be. Although some countries have tested their preparedness with exercises, there is still more testing to be done. Because when the pandemic does come, it will be too late to prepare."

– Dr. David Nabarro, U.N. System Influenza Coordinator, December 2007

Nations Gather

Chicken hatching. (USDA)

Global Action

The International Ministerial Conference on Avian and Pandemic Influenza, hosted by the Government of Egypt in Sharm el-Sheikh October 25-26, 2008, is the latest in a series of international meetings held to galvanize action to contain the spread of avian flu and prepare for a potentially catastrophic human pandemic.

In 2005, at the United Nations General Assembly, U.S. President George Bush announced the formation of the International Partnership on Avian and Pandemic Influenza to elevate the issue of avian flu on national agendas, coordinate efforts among donors and affected nations, mobilize resources, increase transparency in disease reporting, improve surveillance and build local capacity to identify, contain and respond to a future pandemic.

The International Partnership met in Washington, D.C., in October 2005. Since that time, major global conferences on avian and pandemic flu have taken place in Beijing, China (January 2006), Vienna, Austria (June 2006), Bamako, Mali (December 2006) and New Delhi, India (December 2007). The conferences have generated contributions for avian and pandemic flu assistance worldwide. As of December 2007, international pledges totaled $2.7 billion, including a $629 million cumulative pledge from the United States.

The conferences also have produced unprecedented international collaboration among health, agriculture and foreign ministries. Newly developed international mechanisms have resulted in a coordinated international approach, and have facilitated implementation and delivery of avian flu control programs, particularly in countries with inadequate financial resources and weak technical and regulatory infrastructures.

It is now widely acknowledged that cooperative mechanisms related to highly pathogenic avian influenza can serve as a basis for wider programs for other emerging and re-emerging infectious diseases. The international community is reviewing options for strategies, including institutional arrangements, to deal with the health, social, economic and organizational aspects of pandemic flu and other emerging infectious diseases at the animal-human-ecosystem interface.

Avian flu decontamination team. (USAID)

Global Progress

The international focus on the avian flu threat has generated action worldwide. Nearly all governments have put in place basic planning for avian and pandemic flu activities. National surveillance systems with supporting laboratory and field investigation services have been extensively reinforced. Global progress achieved in pandemic preparedness and the ability to respond to avian flu outbreaks reflects the concerted efforts of governments and their citizens and industries, the International Partnership on Avian and Pandemic Influenza, bilateral donor agencies, the European Commission, international and regional organizations, and international financial institutions.

Networks of laboratories, surveillance systems and response mechanisms have enhanced regional capacity to detect and respond to avian flu and other diseases, including the following:

- The Crisis Management Center for Animal Health, established by the U.N. Food and Agriculture Organization (FAO) and the World Organization for Animal Health (OIE), responds rapidly to outbreaks or emergency events related to avian flu and other transboundary animal diseases.
- The Global Avian Influenza Network for Surveillance (GAINS), with participants working in 34 countries, conducts wild bird mortality surveillance, avian flu sampling, local training, wild bird censuses and monitors key wild bird migration routes.
- OFFLU, an international network established by OIE and FAO, provides scientific services to countries with limited capacity.
- The Global Early Warning System for major animal diseases, including zoonoses, coordinates the alert mechanisms of FAO, OIE and the World Health Organization (WHO) to help predict, prevent and control animal disease threats through information sharing, analysis and joint field missions to assess and control outbreaks.

A pandemic can begin in a matter of days. Thus, to ensure global public health, the World Health Assembly in 2007 recognized the need to strengthen and improve the WHO Global Influenza Surveillance Network and the importance of timely sharing of influenza viruses to assess pandemic risk and develop pandemic vaccines.

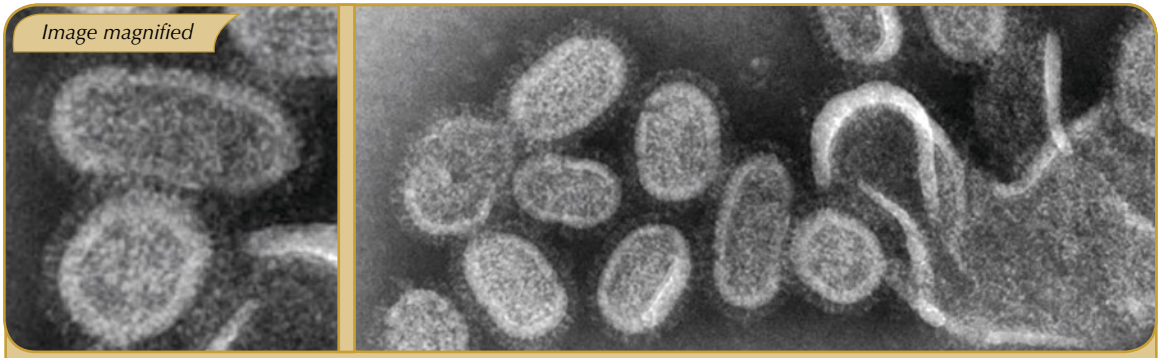
WHO member states also recognized the need for more transparent, fair and equitable sharing of vaccines and other benefits. Though complete agreement on all aspects of virus and benefit sharing has not been reached, the global situation has improved with WHO's establishment of an interim flu virus tracking system and an advisory mechanism for the surveillance network.

Dr. Paula J. Dobriansky, Under Secretary for Democracy and Global Affairs, U.S. Department of State

"We all know the world will face another pandemic. Our continuing efforts to strengthen animal and human health infrastructure around the world to confront the avian flu threat have substantially enhanced global capacity – not only to deal with pandemics, but also other emerging infectious diseases."

- Dr. Paula J. Dobriansky, Under Secretary for Democracy and Global Affairs, U.S. Department of State, October 2008

People and Disease



Electron micrograph of recreated 1918 influenza virions. (CDC)

Infectious diseases are among the leading causes of death. When the incidence of such a disease in people increases over 20 years or threatens to increase, it is called an emerging disease. Emerging diseases are new infections that arise from changes in organisms and known infections that spread to new geographic areas or populations.

Emerging diseases make watch lists and headlines in nearly every nation. In addition to highly pathogenic H5N1 avian influenza, these diseases include Severe Acute Respiratory Syndrome (SARS). An outbreak of SARS in China eventually affected 27 countries and between November 2002 and July 2003 sickened 8,096 people and killed 774.

Highly pathogenic H5N1 avian flu has become endemic in several countries. No other epizootic – an epidemic among animals – has lasted so long or spread so far, so fast, according to OIE. Therefore, the risk of an influenza strain with pandemic potential emerging from infected birds remains an extraordinarily persistent threat.

African Union Chairman Alpha Konaré of Mali (African Union)

"Given the urgency and the seriousness of the situation, I therefore invite all our partners and stakeholders to leave no stone unturned in working towards our goal of minimizing HPAI [highly pathogenic avian influenza] impact in livestock and public health domains in Africa."

- African Union Chairman Alpha Konaré of Mali, December 2006

New Rules and Partnerships

Chicken farmer. (USDA)

International Health Regulations

The International Health Regulations (revised in 2005) entered into force on June 15, 2007. This legally binding agreement contributes significantly to international public health security by providing a new framework for coordinating the management of a public health emergency of international concern. Its implementation will improve the capacity of all countries to detect, assess, notify and respond to public health threats. Countries have two years to assess their capacity and develop national action plans, followed by three years to meet the requirements of the regulations regarding their national surveillance and response systems.

Regional Cooperation

The threat of avian and pandemic flu has generated new levels of regional cooperation worldwide.

In the Asia-Pacific region, the emergence of SARS during 2003, and H5N1 in 2003-2004, showed the impact that emerging diseases can exert on public health, agriculture, trade, tourism, transportation and business. In response, Asia-Pacific Economic Cooperation developed an *Action Plan on the Prevention and Response to Avian and Influenza Pandemics* that committed member economies to cooperate on a multi-sector basis; establish best practices and common approaches to risk communications; mitigate negative effects of avian flu on agriculture and trade; work with the private sector to ensure continuity of business, trade and essential services; and strengthen regional and international cooperation.

In North America, Canada, Mexico and the United States worked closely to develop and implement the *North American Plan for Avian & Pandemic Influenza* as part of the Security and Prosperity Partnership. The plan outlines a collaborative approach that recognizes that controlling the spread of avian influenza or a novel strain of human influenza, with minimal economic disruption, is in the best interest of all three countries. The plan addresses trilateral cooperation on emergency coordination and communications; avian influenza; pandemic influenza; border monitoring and control measures associated with pandemic influenza; and critical infrastructure protection.

Girls in facemasks in Helena, Montana, 1918. (Courtesy Kennon Baird)

Dr. David Heymann, WHO Assistant Director-General for Health Security and Environment (WHO)

"In 1996, WHO decided the regulations needed updating. The vision was for a world on the alert, able to detect and respond to international infectious disease threats within 24 hours using the most up-to-date means of global communication and collaboration."

- Dr. David Heymann, Assistant Director-General for Health Security and Environment, World Health Organization, March 2008

Limiting Pandemic Impact on Communities

The global response to a flu pandemic must include a wide spectrum of medical and non-medical interventions at local, national and international levels to reduce illness and death, and mitigate the socioeconomic consequences. To help prepare nations for a possible pandemic, the U.S. government promotes consideration of non-pharmaceutical interventions adapted to reflect different cultural and social realities across the world.

Each country and its partners may consider adapting the U.S. national community mitigation guidance – developed by the U.S. Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services, in accordance with recommendations of the WHO Secretariat – to reflect each country's unique needs, resources and perspectives.

Chicks. (USDA)

The goal of using non-pharmaceutical interventions, which include social distancing, is to reduce the chances of contact with and transmission of the pandemic flu virus. Such measures are intended to:

- Delay a rapid increase in cases while medical interventions are being developed that address the consequences of a flu pandemic.
- Decrease the number of cases that occur at any given time, to avoid overtaxing health resources.
- Reduce incidences of illness and death in the community.

Recent analyses of the 1918-1919 flu pandemic have shown that such measures can reduce illness and death when used *early* and in a *targeted* and *layered* manner. In other words, authorities should introduce interventions *early* in an emerging pandemic rather than after a pandemic is established. The effectiveness of non-pharmaceutical interventions decreases quickly as more people become infected and ill from flu.

Authorities should *target* interventions to places where transmission is most likely to occur, such as schools and child care facilities, health care facilities, large public gathering spots such as markets and places of worship, and households where people already have symptoms. They should also focus on those at highest risk for transmission, such as children.

Authorities should use multiple non-pharmaceutical interventions at the same time (*layered*) to address different chains of transmission. Isolating only symptomatic people, for example, does not address the potential for their household contacts to infect people outside the home. Voluntary quarantine of household members, as well as isolating those who have symptoms, addresses both possible transmission chains.

In the last century, the pandemics of 1918-1919, 1957-1958, and 1968-1969 varied greatly in severity. As a guide on when to begin non-pharmaceutical interventions and which measures to use, the CDC community mitigation guidance established a "Pandemic Severity Index" for the United States based mainly on the ratio of deaths to flu cases – a measurement useful in estimating the severity of a pandemic on a population. Taking individual situations into account, other countries may wish to consider devising a similar severity metric that will help to guide decisions on when (and which) interventions should be put in place.

Emergency hospital during 1918 flu epidemic, Camp Funston, Kansas. (National Museum of Health and Medicine)

The CDC guidance identifies four basic non-pharmaceutical interventions designed to be implemented in an early, targeted and layered manner.

1. Isolation and supportive treatment of those suspected to have flu. People should be isolated at home or in a health care setting, depending on the severity of illness or the capacity of local hospitals or clinics.
2. Voluntary home quarantine of household members with confirmed or probable flu.
3. Social distancing of children – for example, dismissal of students from classrooms (where appropriate) and suspending school-based activities and child care programs (including public and private schools, colleges and universities), combined with social distancing in the community to reduce out-of-school social contacts and community mixing.
4. Use of social distancing to reduce contact among adults in the community and workplace – for example, canceling large public gatherings and altering workplace environments and schedules to decrease social density without disrupting essential services.

All these interventions reduce the probability of contact between infected and uninfected people. All community-based strategies should be used early in the course of a pandemic and in combination with individual infection-control measures, such as hand-washing and cough etiquette.

Implementation of non-pharmaceutical interventions should be phased. CDC suggests that communities be prepared to maintain interventions for up to 12 weeks. A shorter period could be adequate for less severe pandemics. Stopping or limiting the intensity of interventions while the pandemic virus is circulating in the community could increase deaths because of pneumonia complications and renewed flu transmission.

Planning and preparedness for implementing mitigation strategies during a pandemic are complex tasks that require broad participation. Planning should include educating all levels of government and all segments of society about their roles in implementing these interventions – in particular, sharing responsibility for helping mitigate the consequences of isolation, quarantine, dismissal of students from classrooms and cancellation of public events.

The United States and Its Partners

U.S. Fish and Wildlife Service avian flu sampling project 2006. (USFWS)

Working through the International Partnership on Avian and Pandemic Influenza and other bilateral and multilateral activities, the U.S. government and others in the international community have developed national and international programs to prevent, detect and limit the spread of highly pathogenic avian influenza and other flu viruses that have pandemic potential. Central to that effort is building infrastructure, including laboratory capacity and international rapid response mechanisms, to protect animal and human health.

The U.S. *National Strategy for Pandemic Influenza* calls for coordinated action by all segments of government and society. Within the U.S. government, the Department of State coordinates U.S. international engagement and works closely with the Departments of Agriculture (USDA), Health and Human Services (HHS), Defense and Homeland Security, the Agency for International Development (USAID), and other departments and agencies.

United States funding supports international efforts in more than 100 nations including the following:

Ambassador John E. Lange, Special Representative on Avian and Pandemic Influenza, U.S. Department of State

"We need to maintain our sense of urgency with respect to the pandemic threat if the momentum of preparedness and capacity building is to be maintained. Capacity building doesn't garner headlines, but the threat persists and large-scale injections of resources and energy are still needed to prepare for and respond to a potential pandemic."

- Ambassador John E. Lange, Special Representative on Avian and Pandemic Influenza, U.S. Department of State, October 2007

Sub-Saharan Africa

Regional. GAINS participants in Botswana, Cameroon, the Republic of Congo, Gabon, Mozambique, Nigeria, South Africa, Sudan, Tanzania, and Zimbabwe monitor avian flu in wild birds, track genetic changes in virus samples, and share information.

Pandemic flu journalist workshop participants interview a vendor at a market in Dakar. (Voice of America)

Mali. The International Conference on Avian Influenza in Bamako in December 2006 was co-organized by the Government of Mali, the African Union and the European Commission in coordination with the UN System Influenza Coordinator, UN specialized agencies, the World Bank, OIE and other major partners such as USAID. The conference included a pledging session, and placed special emphasis on international cooperation to help build preparedness and response capacity in Africa as well as other regions of the world.

Mali. Veterinary officials from West and Central African countries participated in a 2008 workshop with USDA experts in Mali to promote Incident Command System standards for influenza outbreak preparedness. The Incident Command System is a flexible tool that unifies the command, control, and coordination of agencies from different disciplines and jurisdictions to achieve a common objective: for example, the rapid containment of an avian flu outbreak.

A television reporter participating in a pandemic flu workshop conducts interviews in a Lagos, Nigeria, poultry market. (Voice of America)

Senegal. The Government of Senegal and USDA collaborated to improve the central veterinary laboratory in Dakar so the facility could serve as a subregional reference facility for avian flu.

Near East and North Africa

Egypt. The Egyptian ministry of health has worked with the Naval Medical Research Unit (NAMRU-3) in Cairo, CDC, and USAID to improve the country's infrastructure by training the staff of the Central Public Health Laboratory and developing a central electronic reporting system for 26 infectious diseases, including avian influenza.

Jordan. Following avian influenza outbreaks in the region in March 2006, the Government of Jordan worked with USDA, CDC, USAID and other U.S. agencies to provide training for officials, veterinarians, epidemiologists and laboratory technicians, distributed personal protective equipment for investigating outbreaks and collecting and shipping samples, and supported avian influenza community training.

South and Central Asia

Bangladesh. The Government of Bangladesh partnered with USAID, USDA, and CDC to use thousands of units of personal protective supplies and laboratory kits to manage poultry outbreaks in 2007 and 2008.

India. The Government of India hosted the New Delhi International Ministerial Conference on Avian and Pandemic Influenza in December 2007 in cooperation with the International Partnership on Avian and Pandemic Influenza, the United States, the European Commission, WHO, FAO, OIE, the World Bank, UNICEF and the UN System Influenza Coordinator. India unveiled its *Vision and Road Map* designed to foster functional links between human and animal health systems while investing in sustainable capacity.

Pakistan. Pakistani health authorities worked with U.S. military medical experts, who brought a mobile laboratory with them to Pakistan, to determine whether a disease outbreak in one local family would evolve into a human pandemic.

East Asia and the Pacific

Regional. In partnership with health ministries in China, Cambodia, Fiji, Laos, Mongolia, New Caledonia, Papua New Guinea, Philippines, Solomon Islands, Vanuatu and Vietnam, CDC completed an inventory of country preparedness for a potential flu pandemic. Core capabilities measured included country planning, communications, laboratory capability, outbreak response, infection control, research and use of findings, epidemiologic capability, routine flu surveillance, resources for containment, health-sector pandemic response, community-based interventions to prevent the spread of flu, and national respiratory disease surveillance and reporting.

Cambodia. The Government of Cambodia is working with FAO on a large-scale program, supported by USAID and other donors, to train animal health workers and veterinary officers in 186 districts.

Personal protective equipment ensures biosecurity at a Vietnamese poultry farm. (Michael Rugh)

China. The International Pledging Conference on Avian and Human Pandemic Influenza was convened in Beijing in January 2006 under cosponsorship of China, the European Commission and the World Bank and in close coordination with WHO, FAO and OIE. Pledges to combat avian influenza internationally totaled over $1.8 billion.

China. Since 2006, the Chinese Academy of Sciences Institute of Zoology and USDA have been engaged in a collaborative investigation of the ecology of H5N1 avian flu in wildlife to improve scientific understanding of flu virus persistence, dispersal among wild birds and associated possible risks to agriculture.

Indonesia. The Government of Indonesia, with support from USAID, FAO, AusAID and others, has established an integrated avian flu surveillance system. Disease surveillance-and-response teams in 27 provinces have worked with one million community members to collect data and increase awareness about avian flu prevention and control, while 12,700 village avian flu coordinators have been trained to conduct community-level outreach.

Vietnam. USAID worked with the Vietnam Women's Union to train nearly 4,000 of its members in 24 high-risk provinces on communications for avian influenza prevention and control. These women were able to share avian influenza messages with more than 88,000 women farmers across the country.

Europe and Eurasia

To control or eradicate avian flu, veterinary medical officer David Suarez provides expertise to several Southeast Asian and Eastern European countries. (USDA/ARS-Peggy Greb)

Regional. The ministry of health in Georgia, along with health ministries in Armenia, Turkey, Ukraine and 14 other countries, worked with CDC to train more than 30 epidemiologists and public health advisors in pandemic flu preparedness.

Armenia. With funding from USAID, and in cooperation with WHO, UNICEF, and others, the Government of Armenia trained village veterinarians in 40 regions and provided equipment for surveillance, response and diagnostics.

Azerbaijan. Working with USAID, the UK Health Protection Agency, WHO and FAO, the health and agriculture ministries in Azerbaijan organized a desktop simulation exercise for avian influenza in animals and humans in 2008.

Ukraine. Five Ukrainian provinces worked with USAID to establish public-private multi-sector groups to address avian flu prevention, outbreak response, and biosecurity for small poultry businesses. Implementing partner UNICEF distributed hundreds of thousands of educational materials and trained leaders in avian flu-related communication.

Western Hemisphere

Chile. Leading broadcaster Chilevisión, in partnership with the U.S. Department of State, produced a 30-minute report on avian flu preparedness and its implications for Latin America.

Costa Rica. The Pan American Health Organization and CDC held a meeting in San Jose in 2007 to discuss an influenza surveillance protocol with Central American ministries of health.

Panama. The Gorgas Memorial Institute of Panama, with assistance from HHS, established a Regional Health Training Center for Central America, built working relationships with all Central American governments, and trained more than 1,400 health professionals in different aspects of pandemic flu. The Government of Panama, in cooperation with USDA and the Regional International Organization for Plant Protection and Animal Health, compiled an inventory of Panama's live bird markets to evaluate management, raise awareness of avian influenza risks, and improve hygiene.

United States. In October 2005, the U.S. Department of State hosted the inaugural meeting of the International Partnership on Avian and Pandemic Influenza in Washington, D.C.

The U.S. Contribution

Dr. Terrence Tumpey examines reconstructed 1918 pandemic flu virus. (CDC)

The latest U.S. government pledge of international assistance -- $320 million announced at the Sixth International Ministerial Conference on Avian and Pandemic Influenza, Sharm el-Sheikh, Egypt, October 25-26, 2008 – is in addition to $629 million previously pledged. This brings the total U.S. government commitment to $949 million. The funds support international efforts in more than 100 nations targeting preparedness and communication, surveillance and detection, and response and containment.

The $629 million in funds pledged through December 2007 have been used to support the following:

- $233 million in bilateral activities, including $51 million in bilateral cooperative agreements with National Influenza Centers and other laboratories in 39 countries.
- $128.5 million for regional programs, including support for Global Disease Detection sites.
- $102 million to international organizations, including $42 million to WHO headquarters and its six regional offices for capacity building and pandemic preparedness, and $10 million to build human vaccine production capacity in developing nations.
- $66.5 million for stockpiles of non-pharmaceutical supplies, including 1.6 million personal protection kits, approximately 250 laboratory specimen collection kits and 15,000 decontamination kits for use in surveillance, outbreak investigation and emergency response and containment efforts.
- $66 million for international technical and humanitarian assistance and international coordination.
- $17.5 million for wild bird surveillance and international research, including vaccines and modeling of flu outbreaks, the U.S. launch of the Global Avian Influenza Network for Surveillance of wild birds, and collecting tens of thousands of samples for H5N1 analysis.
- $15.5 million for global communications and outreach.

Highly pathogenic H5N1 avian flu is studied in Biosafety Level 3/4 laboratories. (NIH/NIAID)

Online Resources

More information about avian influenza and worldwide preparation for a potential pandemic is available at the following Web sites:

United States

- One-stop access to U.S. government avian and pandemic flu information
  http://www.pandemicflu.gov
- America.gov
  http://science.america.gov/science/health/infectiousdisease.html
- Department of State avian and pandemic influenza activities
  http://www.state.gov/g/avianflu/
- Department of Health and Human Services,
  Community Strategy for Pandemic Influenza Mitigation in the United States
  http://www.pandemicflu.gov/plan/community/commitigation.html
- Department of Health and Human Services, National Institutes of Health,
  National Institute of Allergy and Infectious Disease
  http://www3.niaid.nih.gov/topics/Flu/default.htm
- Department of Health and Human Services,
  Centers for Disease Control and Prevention avian influenza resources
  http://www.cdc.gov/flu/pandemic/
- U.S. Agency for International Development
  http://www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html
- U.S. Department of Agriculture
  http://www.usda.gov/wps/portal/usdahome?navtype=SU&navid=AVIAN_INFLUENZA
- Department of the Interior, U.S. Fish and Wildlife Service
  http://www.fws.gov/home/avianflu/
- Department of Defense
  http://www.dod.mil/pandemicflu
- Department of Defense, Global Emerging Infectious Disease Surveillance Program
  http://www.geis.fhp.osd.mil/GEIS/SurveillanceActivities/Influenza/influenza.asp

International

- United Nations avian influenza and pandemic threat site
  http://www.un-influenza.org/
- U.N. System Influenza Coordinator
  http://www.undg.org/index.cfm?P=21
- World Health Organization
  http://www.who.int/csr/disease/avian_influenza/en/
- Food and Agriculture Organization
  http://www.fao.org/avianflu/en/index.html
- UNICEF
  http://www.unicef.org/avianflu/index.html
- World Organization for Animal Health
  http://www.oie.int/eng/info_ev/en_AI_avianinfluenza.htm
- World Bank
  http://worldbank.org/avianflu

AVIAN INFLUENZA ACTION GROUP
UNITED STATES DEPARTMENT OF STATE
WASHINGTON, D.C. 20520
OCTOBER 2008