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Heart to Heart

With Philip S. Chua, M.D.

Bird Flu Pandemic

WASHINGTON (Feb. 24) - Amid dire warnings of an Asian pandemic, the government is preparing to test an experimental bird flu vaccine and is increasing disease surveillance in hopes of reducing the toll from any eventual American outbreak.

Antiviral drugs are being stockpiled, and 2 million doses of vaccine are being stored in bulk form for possible emergency use and to test whether they maintain their potency.

United Nations officials warned on Wednesday that the Asian bird flu outbreak poses the "gravest possible danger" of becoming a global pandemic.

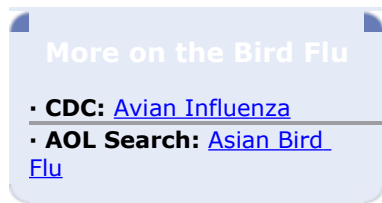
Dr. Julie Gerberding, director of the federal Centers for Disease Control and Prevention, told the National Press Club this week that "it is a worrisome situation," though she also said the United States "is not immediately on the brink of an avian flu epidemic."

The flu has affected poultry in eight Asian countries, with 45 human deaths among people who caught the illness, a strain of flu known as H5N1.

So far, humans appear to have caught this flu from chickens and other poultry, and the virus is not known to have spread from person to person.

What health authorities most fear is that the virus will mutate into a form that can pass easily from one human to another. That's when a global threat would be most likely.

The deadly flu of 1918, which killed from 20 million to 50 million people worldwide, didn't appear suddenly but mutated gradually into the deadlier form, Gerberding explained.



More on the Bird Flu

- **CDC:** [Avian Influenza](#)
- **AOL Search:** [Asian Bird Flu](#)

"That's why it's important to have flu vaccine and antivirals, to be ready to react when it starts to emerge," she said.

The first doses of an experimental vaccine are almost ready for testing, antiviral drugs are being stockpiled, and the government has increased disease surveillance and expanded research programs.

The new vaccine was prepared in two different concentrations - 4,000 doses each - and is nearly ready to be shipped to the National Institute for Allergy and Infectious Diseases for clinical trials, Len Lavenda, a spokesman for the pharmaceutical firm Sanofi Pasteur, said Wednesday.

NIAID Director Dr. Anthony Fauci said the vaccine will be tested at centers in Rochester, N.Y., St. Louis and in Maryland and Texas to make sure it is safe and to determine the correct dosage in such groups as the elderly, children and healthy young people.

In addition to the vaccine scheduled for trials, Sanofi Pasteur has produced 2 million doses of bulk avian flu vaccine, Lavenda said. The vaccine is being monitored for potency to determine if such vaccines can be produced in advance and stored until needed, he said.

Lavenda said any decision on using it if avian flu should spread would be up to the government.

Fauci said that vaccine could be available for emergency use if needed.

The 8,000 trial doses were not made under full commercial conditions, he said, so the company geared up at the same time to make 2 million doses under commercial production processes, "so that if the need arises they could rapidly scale up to tens of millions of doses."

In a normal year more than 100 million doses of influenza vaccine are prepared for use in the United States. The inability of one manufacturer to supply its planned 48 million doses caused a shortage this year, though about 58 million doses were produced.

Because the flu changes from year to year the vaccine has to be reformulated annually.

In Europe, a program called Flupan is under way with Sanofi, European Union agencies and the University of Reading in England working on a bird flu vaccine for clinical study.

CDC spokesman Tom Skinner said that agency has a stockpile of antiviral drugs that could be used in the event of a pandemic, depending on the virus that emerges.

The disease has appeared in poultry in Cambodia, China, Indonesia, Japan, Laos, South Korea, Thailand and Vietnam.

In an effort to catch any U.S. cases early, CDC has contacted state and local health departments, hospitals and doctors, urging them to ask about recent travel by people with flu symptoms.

It called for testing patients for the bird flu if they have been in an affected area within 10 days and have confirmed pneumonia or other severe respiratory problems.

In addition, CDC said, testing should be considered for patients with a temperature greater than 100.4 who have visited such countries, visited a poultry farm and have a cough, sore throat or shortness of breath.

Major flu pandemics over the last century, according to CDC, include:

Spanish flu that swept the world in 1918-1919 and killed an estimated 500,000 Americans. Nearly half were young, healthy adults.

Asian flu in 1957-1958 was first identified in China. It claimed 70,000 lives in the United States.

Hong Kong flu, 1968-1969 caused about 34,000 American deaths.

Bird Flu Worse Than SARS

An outbreak of bird flu is posing an alarming threat to South East Asia. Tens of millions of chicken in Vietnam, Cambodia, Indonesia, South Korea, Pakistan,

Thailand, Japan, Laos, Taiwan, and Mainland China have already died from this viral disease or from mass culling poultry in a desperate move by the various governments to prevent the spread of this highly fatal bird illness. Some people had somehow contracted the virus, killing eight in Vietnam and two in Thailand. In February 2003, cases of avian flu (H7N2 subtype) and spread to humans were reported in the Netherlands, where one veterinarian died and 83 poultry workers were infected, and where culling of 30 million birds out of 100 million was done in a week. If the avian flu virus mutates into one with fatal virulence, and becomes transmissible from person to person like the human flu, it would be far deadlier than the SARS virus and could result in a lethal pandemic, like the one in 1918-1919, when a new subtype of influenza emerged and killed an estimated 40-50 million persons around the world in several waves of infection over two years.

What is Bird Flu?

Also called avian flu, bird flu is caused by influenza A virus that infects birds, ducks, turkey, chicken. This infection was first recognized in Italy in 1878 and extremely contagious in birds, with a mortality approaching 100%. A wide range of influenza viruses have been known to circulate in wild birds, but it was only in 1997 when it was discovered that avian flu (subtypes H5N1 and H9N2) for the first time jumped the species barrier, from birds to humans. The strain (H5N1) of the disease resulted in the death of six people in Hong Kong that same year, the first human death reported in mid-May 1997. The outbreak that killed those six and infected 12 others, nine of whom were children under 10. About two years later, 2 cases of human infection by the H9N2 strain of the virus occurred, also in Hong Kong. Taiwan has H5N2 strain. Both strains were found to be circulating among chickens in that city and some of the victims had contact with poultry (bird droppings) when they got sick.

Is there human-to-human transfer?

There is no evidence to date to show that human to human spread of avian flu with either strain is possible. Those who contracted bird flu must have had close contact with infected chickens or their excrements. Fortunately, bird to human transfer is rare. Somehow, waterfowl, the reservoir (carrier) of the avian virus, are more resistant to the illness but the virus is fatal to the domestic birds, chickens, turkey, who are infected by contact with the droppings of these waterfowl. Transmission to, and among, susceptible birds is by inhalation of the influenza viral particles in nasal and respiratory secretions and from contact with the excrements of infected birds, whose feces are loaded with the virus.

So, why the worry?

If the avian flu virus remains unchanged in its morphology, virulence, and other attributes, the virus will basically infect only birds. However, viruses are

known to mutate “for survival, to prevent their own extinction.” If the avian flu virus mutates into a more lethal form, and one that is transmissible from person to person, this could unleash a most catastrophic and fatal worldwide disease, worse than what mankind has ever experienced before. The more the bird flu spreads in various countries, the greater the chances of mutation. Frequent mutation of the virus makes it most difficult to find a specific vaccine or cure for the specific strain of the virus. The World Health organization is particularly concerned that the bird flu virus “could swap genes with a common (human) flu virus, creating a lethal pathogen that could spread around the globe within months” and kill men by the millions. This grave potential is what worries the global scientific community.

Is avian flu related to SARS?

No, they are not related. Coronavirus, similar to a type of common cold virus, caused SARS. Avian flu, as stated earlier, is caused by influenza A virus. But both viruses originally afflicted animals and spread to man (more common with SARS but very rarely in the case of bird flu). The avian flu virus, like the flu virus that afflicts man, belongs to the influenza virus “family,” but they are of different kind and strain. The flu virus that infects man does not infect birds, and vice versa. The incidents of bird to human transmission in Hong Kong were unique occurrences.

How does avian flu spread?

World Health Organization (WHO) investigators attributed the transmission of avian flu to humans to contact with droppings of infected birds. They said that the two outbreaks in Hong Kong were “facilitated by poor sanitation and slaughtering practices in outdoor poultry markets close to housing areas.” The exposure of the domestic chickens to droppings of the wild bird carriers of the virus (especially ducks) obviously precipitated the disease among these domestic fowls.

What makes spread to humans more likely?

Close scientific scrutiny of the Hong Kong outbreaks led to the conclusion by WHO “that the following conditions made the spread of avian flu to humans more likely: (1) Poor sanitation of the wholesale markets for poultry and of the chicken stalls in retail outlets; (2) chicken stalls and markets were in close proximity to living and playing areas; (3) no central slaughtering facility for chickens, and the practice of slaughtering chicken at retail outlets was highly unsatisfactory; (4) no system to monitor the importation of chickens into Hong Kong from China mainland to ensure public health safety; and (5) poor standard of hygiene of local chicken farms.” The European Union and other nations have officially banned importation of chicken from the affected countries.

What are the signs of avian flu?

Basically, they are the same as with the other strain of flu (like the ones that affect humans): loss of appetite and decreased egg production are early signs, then fever, sore throat, cough, sneezing, ruffled feathers, swollen heads, depression, diarrhea, malaise and fatigue. Some birds die fast without obvious signs. The symptoms could be mild or severe and fatal, depending on the strain of the virus, the resistance of the host, and environmental stressors.

Any risk in getting avian flu from waterfowl?

Avian flu is said to be widespread in wild birds, especially in ducks. The infected migrating birds contribute significantly to the spread of the virus to other birds, and the domestic chickens and turkeys are major victims.

Any poultry vaccine against the avian flu?

Flu vaccines are effective in preventing the clinical symptoms of influenza infections in several species including poultry. The dilemma is that vaccines are not cross-protective for the 15 virus subtypes that infect domestic poultry, and there is no means of predicting which strain will infect a flock. So, vaccination is not practical and effective in preventing avian flu.

Is it safe to eat chicken?

According to WHO health experts, there is no evidence that eating chicken products could pass the avian flu virus and cause infection. Viruses are killed by heat. Just like any meat, chicken products should be thoroughly cooked at a temperature of at least 70 degrees Celsius. Viruses killed at 60 degrees Celsius in 30 minutes. Proper and frequent hand-washing, and common sense personal hygienic practices after handling poultry, are strongly recommended.

Is there a travel ban to the affected countries?

No, there is no travel ban or restriction. Travel to the Asian countries where cases of avian flu have been reported is deemed safe. Bird to human transfer is very rare and limited to those poultry handlers and their family. The only advise is for the travelers to stay away from wet markets, where live chickens, ducks, and other birds are being sold, and to avoid exposure to these birds in farms or other places.

How devastating could an outbreak be to poultry?

Severely. The outbreak in Pennsylvania, USA, in 1983-84 resulted in the destruction of more than 17 million birds, a loss of about US\$65 million. The outbreak in Mexico in 1992 took 3 years to control, causing extreme financial loss to

the industry and the government. In developing countries in Asia, this could translate to a more devastating aftermath. This is the reason why governments are exerting extra efforts in containing the spread of avian flu.

Any drugs for prevention and treatment?

There are two classes of drugs being used today for the prevention and treatment of human flu. They are the M2 inhibitors (amantadine and rimantadine) and the neuraminidase inhibitors (oseltamivir and zanamivir). However, their use in avian flu has not been found to be effective in their preliminary use. Network laboratories are conducting further studies on these drugs and other future options.

How can we prevent and control the disease?

Pre-emptive bio-security strategies to prevent the infection and other infections in poultry include strict adherence to daily sanitary practices in the housing for the flocks and feeding techniques, and personal hygiene of the bird handlers. Wild birds and their droppings are a major source of infection. Humans and domestic poultry should be protected from these droppings and contact with free-flying birds. People should avoid live markets. The saliva, nasal secretions and feces of afflicted birds are highly infective in the first 14 days of the infection, but not after four weeks. Isolation and prevention of cross-traffic between areas of infected and non-infected birds are essential. Most detergents and disinfectants (formalin, iodine, etc.) kill flu viruses, which are also inactivated by heating and drying, provided organic materials (droppings, manure, feces) have been washed away and the area thoroughly cleaned and disinfected. Contaminated organic material should be composted or buried to prevent spread of the virus. Frequent random official health inspection of chicken farms and slaughter houses is important. And so with public vigilance in reporting violations and bird (chicken) smuggling into the country.

What to do if avian flu is suspected?

There is no reported case of avian flu in this country, but if one suspects its presence, he/she should immediately refer it to a veterinarian for confirmation of diagnosis. Where indicated, the veterinarian will initiate the required notification of the responsible governmental health agency.

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