

Bird Flu—The Next Human Pandemic?

In 2005 an epidemic of a viral respiratory disease called bird flu (avian influenza) continued to devastate poultry farms in many countries. The epidemic, which began in 2003, had by the end of the year infected poultry in Cambodia, China, Indonesia, Japan, Kazakhstan, Laos, Malaysia, Mongolia, North Korea, Romania, Russia, South Korea, Thailand, Turkey, Ukraine, and Vietnam. Hundreds of millions of birds had been killed by the disease or slaughtered in efforts to limit its spread.

The deadly disease is caused by the H5N1 strain of type A influenza virus. The H5N1 strain, which was first isolated from terns in South Africa in 1961, is now common in waterfowl such as wild ducks, which can then infect domesticated birds, among which the disease spreads easily. The H5N1 virus was first found to have the capability of infecting humans in 1997, when an outbreak of bird flu in Hong Kong poultry caused severe illness in 18 persons, 6 of whom died.

The idea of influenza's passing from birds to humans seems frightening, but there is nothing new in it. Genetic research suggests that all flu strains originated from birds. By year's end the current epidemic of bird flu had led to human cases of the disease in Cambodia, China, Indonesia, Thailand, Turkey, and Vietnam. Vietnam was the worst hit, with 93 cases. Of those, 42 died. According to the World Health Organization, the total number of cases by the end of 2005 stood at more than 140, with about a 50% mortality rate. Sustained transmission of bird flu from person to person had not been observed, but health officials were aware that the H5N1 virus could rapidly mutate or combine genetically with a human influenza virus to yield a virulent new strain that might easily spread through the human population.

Can a bird-flu pandemic be prevented? Laboratory tests suggest that two popular antiviral drugs, amantadine (Symmetrel) and rimantadine (Flumadine), do not work against H5N1. Hopes are pinned on two others, oseltamavir (Tamiflu) and zanamavir (Relenza). The National Institute of Allergy and Infectious Diseases, part of the U.S. National Institutes of Health, awarded contracts for the production and clinical testing of an investigational vaccine based on the H5N1

virus, and in August it announced that preliminary testing of the vaccine had been successful. Even after it became available to the public, however, the vaccine would still take time to produce, and a vaccine made for the H5N1 subtype might not provide immunity to a mutated form. Marc Lipsitch, an epidemiologist at the Harvard School of Public Health, warned of insufficient global preparation for a flu pandemic and stated that if a flu pandemic reached the United States, the country would be able to manufacture enough vaccine for only about 25% of its population and enough Tamiflu for less than 1%. Recognizing the need for greater preparation, in November U.S. Pres.

George W. Bush outlined a \$7.1 billion plan to provide funding for the early detection and containment of any pandemic flu outbreaks both in the United States and in other countries, improved methods for creating flu vaccines, and the stockpiling of flu vaccines and antiviral drugs. The sense of urgency in Southeast Asia in dealing with the spread of the bird flu is great. In some countries taxis even have signs warning passengers who feel ill to go straight to a hospital. The influenza pandemics of 1957 and 1968 each killed millions of people, and the great influenza pandemic of 1918 killed tens of millions. Another flu pandemic is clearly a possibility, and preparing for the threat is a serious and difficult problem. (BRIAN J. FORD)

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