

Could Avian Flu Cause A New Pandemic?

Influenza originally from birds has killed 30 of the 42 people infected with it in Southeast Asia over the last year. This particular flu virus has been mainly transmitted from birds to humans; but recently, in Thailand, there is a probable case of human-to-human transmission, which has experts quite worried about a new flu pandemic.

The concern about a new pandemic is justified, based on several scientific considerations. First, this avian flu virus has shown a very high lethality in people who contract it, and this may be due to a very limited human immune system resistance to the virus. Second, there is no vaccine currently available that can protect the human population from this virus. And lastly, if the virus does acquire the ability to spread from person to person,

effectively jumping the species barrier, it will be very difficult to contain.

1997 Epidemic Warning

Influenza viruses that infect people come from two groups, A and B, and are further categorized into subtypes based on the surface antigens *hemagglutinin* (H) and *neuraminidase* (N). The current avian flu now spreading in Asia is influenza A, subtype H5N1, which originally came from ducks and geese in China.

The 1997 Hong Kong outbreak of avian flu that killed six people was the first time this subtype H5N1 was found to be able to infect humans. The H5N1 flu virus is present in a large number of ducks and geese in southern China; most of these birds do not display any symptoms of illness, and the disease is not lethal. But when this same H5N1 virus was transmitted to chickens, the infection was found very often to be lethal.

The 1997 Hong Kong outbreak of avian flu was contained by a massive quarantine and slaughter of all poultry

in the province. The problem now facing Asia, is that the natural reservoir of the virus in the ducks and geese, has allowed the virus to mutate into an increasingly pathogenic form that can infect mammals.

In an experimental study published in May 2004, researchers in China isolated 21 different H5N1 virus types from apparently healthy ducks over the period 1999-2002, and then analyzed their ability to infect mice. What they found was that over this period, the H5N1 virus progressively gained the ability to more easily infect mice, and cause increasingly damaging and lethal disease in them.

How the virus is genetically reassorting itself to be able to infect mammals, or if it is picking up genes from another flu virus in another mammal, such as the pig, is not yet known. If this H5N1 virus does acquire the ability to infect humans, and spread from person to person, it could represent a threat equaled only by the 1918-19 flu pandemic known as the “Spanish Flu,” that killed, not hundreds of thousands as in normal flu seasons, but 20 million people.

—*Colin Lowry*