

## The Inevitable Avian Flu

By **Alissa Becker**//Special To The Tab

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When meteorologists broadcast that a noreaster is tearing towards New England, Star Markets become clogged with frenzied shoppers stocking up on peanut butter and Duct Tape. But when scientists warn that the waves of a bird flu epidemic are expected to crash on the shores of California this summer, the forecast is met with disbelief and apathy. This lack of fear is understandable. Often we spend years awaiting catastrophic events that never come to pass; Y2K, for example. However, bird flu is no empty threat.

There are many environmental factors increasing the likelihood that the avian influenza virus will spread to humans. Deforestation shrinks habitat for the animals which are the "reservoirs" for these viruses and increases opportunities for those animals to come into contact with human communities. As the numbers of domestically farmed birds increases, avian viruses that have infected farmed birds have significantly more opportunities to infect humans. The likelihood of a virus crossing over to humans is also increased by the very crowded conditions in which people and domestic fowl are found in developing countries, such as the Philippines, Indonesia, and China. Some local customs, such as consuming the blood of domesticated birds, cockfighting, and the widespread sale of pet birds, further increase the potential for the virus to move into the human population. The uncontrollable migration of wild birds from areas affected by the virus provides yet another avenue for the virus to spread around the world. Taken alone, none of these factors are cause for alarm, but together they bring us closer to a pandemic.

When a bird flu pandemic develops, within a year a third of the world's population would contract the virus. Up to 90 million Americans would fall ill, with nine million Americans requiring hospitalization in critical care units for respiratory distress. Between 200,000 and two million Americans would be expected to die. Laurie Garrett of the Council on Foreign Relations has stated that the only thing that could exact "a larger human death toll would be a thermonuclear war."

In some respects, the avian influenza virus and the HIV virus that causes AIDS are similar; both originated in non-human hosts. HIV began as a virus affecting species of monkeys before it mutated and became capable of infecting humans. Similarly, the avian influenza virus is normally limited to infecting birds, but on rare occasions it changes slightly so that it is able to infect humans. As both these viruses originated in animals, the human immune system lacks any exposure- and thus immunity- to them, so they can lead to human epidemics, with high mortality rates. (Other familiar, deadly diseases that originated in animals include Lyme disease, West Nile, dengue, and ebola.)

The avian influenza virus and the HIV virus are not alike in all respects. The most important distinction is that, while AIDS is an epidemic that will likely continue

indefinitely, the avian flu is a pandemic that is expected to last only eighteen months. In this short period of time, however, avian flu will kill more people in its first twenty-five weeks than AIDS has killed in its first 25 years.

Most scientists agree that a pandemic is inevitable. The only thing that has kept the bird flu from spreading human-to-human is a protein on the virus' surface, which acts much like a key to open up cells for invasion. Currently the virus has a "protein key" which only unlocks birds' cells and a handful of unlucky humans' cells. To infect millions of humans and cause an epidemic, the virus needs only to change this one protein so that it fits into the "locks" of human cells. The virus could randomly mutate until it happens upon the right key, or it could acquire a protein key from the influenza virus that is already adapted to humans. With the high frequency of human-domestic fowl contact in Southeast Asia, the avian influenza virus is provided with many gene-altering encounters with the human influenza viruses.

Although the bird flu virus is currently rarely transmissible from birds to humans, once in possession of the proper protein, it will easily spread from human to human. Unlike HIV, which can only be spread through exchange of certain bodily fluids, the bird flu virus can be spread with a mere sneeze, cough, or handshake. Because symptoms take several days to develop, it is impossible for airports to screen for bird flu. People who don't know they are infected could board airplanes and spread the virus around the world in mere hours. When the virus becomes transmissible from human to human, there will be little to impede its spread.

A bird flu pandemic is inevitable, too, because avian influenza pandemics have occurred many times. In the past three hundred years, there have been ten reported avian influenza pandemics, about one every thirty years. The most lethal one occurred less than hundred years ago, in 1918. Although often overshadowed by World War I, this pandemic killed half a million Americans, more than the number of American fatalities in World War I, World War II, Korea, and Vietnam combined. The last bird flu pandemic occurred under 40 years ago in 1968, so the next one is slightly overdue.

The human population will always be plagued by diseases and pandemics will continue to kill millions. The seeds have been sown for another deadly avian influenza pandemic; right now, millions of avian influenza viruses are feverishly mutating and re-sequencing their genes in search of the perfect protein and waiting for this virus are myriads of unchecked entrances into the human population. We do not know exactly when this deadly virus will emerge, but we must prepare for its inevitable arrival.

For more information on avian flu visit [www.fluwikie.com](http://www.fluwikie.com) or read *The Great Influenza* by John M. Barry.

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