



Background: Avian Flu

Judging by the typical reactions of governments and health organizations around the world, one would think that the bird flu crisis has been caused primarily by small flocks of chickens kept in the backyards of families in developing nations.

Backyard and rooftop poultry farms have been restricted or outright banned in at least 15 countries. The prime minister of Egypt announced, "The time has come to get rid of the idea of breeding chickens on the roofs of houses."¹ And a high-ranking official with the United Nations' Food and Agricultural Organization (FAO) declared, "The fight against bird flu must be waged in the backyard of the world's poor."²

Backyard flocks throughout Asia, and increasingly in Africa and the Middle East, are being "culled" – destroyed – at a dramatic rate, and in many cases their owners are being inadequately compensated or not at all.

These swift measures are not justified by the facts. The reality of the crisis is that just as much, or perhaps more, is unknown about the spread of Type A avian influenza than what is known.

Scientists have little idea precisely how the virus mutated from its naturally occurring, generally non-fatal form found in wild migratory birds, to an almost always fatal virus that has killed or led to the preemptive destruction of more than 200 million farm-raised chickens, geese, ducks and other birds since it emerged in southern China in 1996. The virus – known as H5N1 – has also infected about 200 people in nine countries, killing about half of them.

While many backyard flocks have indeed been infected, many huge factory-scale poultry farms have also been struck. And it is within these large operations – where up to hundreds of thousands of birds breathing, urinating and defecating in close quarters give viruses limitless opportunities to mutate – that scientists suspect the virus morphed from relative harmlessness to destructiveness. "The more the virus replicates, the more likelihood there is of genetic changes," said Ray Arthur, Associate Director for Global Health at the US Centers for Disease Control's National Center for Infectious Diseases.³

Yet, while international health organizations have called for a harsh crackdown on family-based farms, no such measures are being taken against industrial-scale operations.

In fact, the FAO's prescription is to build *more* factory farms, the idea being that bottling up birds will prevent them from infecting – and being infected by – other factory farms, backyard

flocks and migratory birds. This defies logic. Given that factory farms are essentially mutation factories, this practice should be discouraged, not encouraged.

It also defies the FAO's own diagnosis of the problem: "The dramatic growth in domestic poultry production is part of the explanation. Once high-density industrial poultry areas become affected, infection can explosively spread within the units, and the very high quantities of virus produced may be easily carried to other units, to humans, and into the environment. Hence, the current widespread infections of commercial poultry flocks in many countries of Asia is not a total surprise."⁴

Along with bird flu, the FAO says foot-and-mouth disease and swine fever may have been caused by "instabilities in the [animal] production environment." These instabilities, the agency says, may require "production changes in the future."⁵

Fearing Fear Itself?

Mixed messages also abound within the public health community.

On one hand, governments and health organizations fear that bird flu could lead to another human influenza pandemic – or global epidemic. Recent findings indicate that Spanish flu, which killed up to 50 million people worldwide in 1918-1919 in the largest disease outbreak since the Black Death, may have originated as an avian virus. The Asian flu of 1957-1958 and Hong Kong flu of 1968-1969, which killed about 2 million and 1 million people, respectively, also are believed to have had links to avian flu viruses.

President Bush, trying to deflect criticism over the government's inadequate response to Hurricane Katrina, has pledged an all-out fight against bird flu (and has reportedly read a book about the 1918-1919 pandemic). The government is spending billions of dollars to formulate and stockpile vaccines and antiviral medications, track and test migratory birds, and develop emergency response plans if bird flu reaches the US – which various officials predict could happen by spring 2007. And the Department of Homeland Security and other federal government agencies say they will detain anyone flying into the country who looks sick.⁶

Pounded daily by fear-inspiring messages in the media, one-third of Americans polled in spring 2006 said they fear someone in their family would contract bird flu.⁷

At the same time, two of the nation's top infectious disease experts say this may all be an overreaction. Julie Gerberding, director of the US Centers for Disease Control, said, "There is no evidence it will be the next pandemic." And Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, said, "The American people should not be worried."⁸

As the facts stand now, at least, these assessments appear sound. Most human cases have occurred in rural areas with small backyard flocks – when people directly handled or slaughtered infected birds, touched objects smeared with bodily fluids from infected birds, or swam in contaminated water. In its current form, H5N1 has rarely spread from one person to another, and

has not been found to be transmitted beyond one person.⁹ (Cells the virus can attack are deep within the human respiratory tract, so coughing or sneezing won't spread it.¹⁰)

And, though the virus theoretically can survive if meat is not heated to 160° F, no one is known to have been infected by eating undercooked poultry.

More Questions than Answers

H5N1 – known as “chicken Ebola” because it causes extensive internal bleeding – was first detected in 1959 among domestic chickens in Scotland.

For reasons that may never be known, the virus broke out in 1996 at a goose farm in China's southeastern Guangdong province. The first human victims came to light a year later, when a virus traced to the Guangdong strain infected 18 people in Hong Kong, killing 6 of them. The cause was believed to be infected birds from “wet” markets, where poultry is either sold live or slaughtered on the spot. The city's entire population of 1.5 million birds was destroyed within three days, potentially averting a broader human outbreak.

The virus reappeared in Asia in mid-2003 and has since been detected in farmed poultry or wild birds in about 50 countries in Asia, Europe, Africa and the Middle East, according to the World Health Organization (WHO). About 200 human cases – half fatal – have been reported in nine countries: Azerbaijan, Cambodia, China, Egypt, Indonesia, Iraq, Thailand, Turkey and Vietnam (which has had about 90).

The general theory is that at some unknown point in history, farmed birds became infected with the naturally occurring, rarely fatal strain by coming in contact with infected wild birds, or by swimming in water or walking through dirt containing bodily fluids from infected wild birds. Once it reached concentrated, industrialized operations, the virus is believed to have mutated into its deadly form.¹¹ This super-virus is easily transmitted by direct contact among farmed birds, and by sharing contaminated cages, water, feed and other equipment and supplies. The virus can wipe out up to 100 percent of confined birds within two days.¹²

For reasons that remain poorly understood, the deadly strain has been passed back to wild birds. In the spring and summer of 2005, up to 6,000 wild geese, gulls and other migratory birds died of H5N1 at the Qinghai Lake nature reserve in central China. And it began appearing in ducks, swans, buzzards and other wild birds in Europe in February 2006. The virus struck farm-raised poultry in Europe in early 2006, resulting in the destruction of 11,000 turkeys in France in February, and 30,000 turkeys, geese and ducks in Germany in April. Still, scientists are baffled as to how the infection occurred.

One thing is known almost for certain: without a commercial poultry industry, the deadly bird flu would probably not exist. Avian viruses have “lived with aquatic birds for probably millions of years in perfect harmony,” says virologist Robert Webster of St. Jude Children's Research Hospital in Memphis, better known as “The Flu Hunter.” “It's only when they come into domestic poultry that they kill.”¹³

How the virus moves among the three main populations of infected birds – factory-farmed poultry, backyard flocks and wild birds – remains open to wide speculation. Many outbreaks have occurred in backyard flocks, but it is unclear how these birds became infected. The WHO theorizes infected wild birds may be the cause, but the deadly strain was absent from wild birds until only recently.

In any event, southern China has been identified as the “epicenter” of the outbreak, as genetic mapping of the virus has found that trade in farmed poultry from this region has caused the virus to proliferate throughout Asia.¹⁴

The Role of Factory Farms

Governments, health organizations and the media have largely ignored the role factory farms have played in the crisis. Several huge outbreaks have been reported:

- In Laos, 42 of 45 the outbreaks reported in spring 2004 occurred in commercial operations – and 38 were centered in the capital of Vientiane. The few small operations that did have outbreaks were located near commercial operations. The virus killed 50,000 birds, and another 100,000 were destroyed.¹⁵
- In Egypt, the first outbreaks were reported at several factory farms in early 2006, resulting in the destruction of about 200,000 birds. Yet, Prime Minister Ahmed Nazif announced, “The time has come to get rid of the idea of breeding chickens on the roofs of houses.” The government ordered all backyard and rooftop flocks to be destroyed and banned live bird markets, where 80 percent of the country’s poultry is sold.¹⁶
- In Nigeria, the virus spread from a farm with 40,000 birds to 30 other factory farms, killing 150,000 birds so far in 2006.¹⁷
- In Vietnam, 117,000 birds were destroyed at a factory farm in Ha Tay Province in February 2004.¹⁸
- In Russia, 460,000 birds were destroyed at a factory farm in Kurgan province in 2005.¹⁹
- The virus has also broken out in large poultry operations in Cambodia, India, Japan and the Ukraine.²⁰

For all the theories being explored as to how the virus infects backyard and wild populations, very little discussion has taken place to explain the mass death in factory farms.

Yet, the FAO predicts a future that will include “more concentrated markets, with fewer, larger producers,” “poultry production zones [where] infrastructure can be concentrated,” “centralized slaughtering in large slaughterhouses,” and “fewer smaller producers.”²¹

Another problem that has gone largely ignored is the destruction of wetlands, which, according to the United Nations Environment Programme, is “forcing many wild birds onto alternative sites like farm ponds and paddy fields, bringing them into direct contact with chickens, ducks, geese, and other domesticated fowl.”

UNEP studied this phenomenon at a conference in Nairobi, Kenya, in April 2006. The organization found that placing factory farms along migratory bird routes may increase the risk of transferring diseases between wild and farmed birds.

UNEP also said that “heroic efforts” focusing on isolation, quarantine, culls and medications are likely to be quick-fixes that offer limited, short-term results. And the organization said forcing communities, particularly in Southeast Asia, to segregate poultry from people “is at odds with generational cultural traditions and practices.”

In another critical observation that has failed to receive ample attention, UNEP expressed concern over genetic monocultures of farmed poultry, claiming they are less resistant to disease.²² This could help explain why H5N1 has wiped out entire populations of factory farms.

Instead of focusing – and indiscriminately cracking down – on backyard poultry farms, governments and health organizations should take a cue from the evidence pointing to factory farms as being the genesis of the deadly mutant virus.

They should also examine the role that the international trade in poultry and poultry products has played in spreading the virus. In a special edition on bird flu, the journal *Science* reported in April 2006: “It is clear that...the outbreaks and their geographical spread probably cannot be stopped without implementation of proper control measures in the global poultry industry.”²³

For now, governments and health organizations seem to be going after the easy targets – family farmers with little or no economic and political power to question mandates from above. And they are forced to take what they can get. When 300,000 chickens in 300 villages in the Indian state of Maharashtra were destroyed in March 2006, farmers were given just US\$0.88 per bird – far less than the actual value of a village bird, which produces eggs worth four times more than industrially produced eggs.²⁴

Meanwhile, authorities are encouraging the very practices that may have caused the crisis in the first place. Bird flu is yet another symptom of a food-production system that is out of control.

¹ “The top-down global response to bird flu.” GRAIN (Barcelona), April 2006.

² Lam, Tran Dinh Thanh. “Bird flu strategy will hit poultry farmers.” Inter Press Service, Nov. 15, 2005.

³ Personal communication, April 2006.

⁴ “Animal Health Special Report: Avian Influenza – Questions and Answers.” Food and Agricultural Organization.

⁵ Ibid.

⁶ Fox, Maggie. “Groups question US plan to detain sick travelers.” Reuters, April 21, 2006.

⁷ Woodward, Calvin. “Poll shows fear of bird flu widespread.” Associated Press, April 21, 2006.

⁸ Gardner, Amanda. “US bird flu threat may be overstated.” HealthDay, April 21, 2006.

⁹ “Key facts about avian influenza (bird flu) and avian influenza A (H5N1) virus.” US Centers for Disease Control.

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- ¹⁰ Wade, Nicholas. "Bird flu resistance in humans explained." *New York Times*, April 14, 2006.
- ¹¹ Webster, Robert G. et al. "H5N1 outbreaks and enzootic influenza." US Centers for Disease Control, *Emerging Infectious Diseases*, 12(1):3-8, January 2006.
- ¹² "Key facts about avian influenza (bird flu) and avian influenza A (H5N1) virus." US Centers for Disease Control.
- ¹³ Harder, Ben. "When flu flies the coop." *Science News*, 168(11):171, Sept. 10, 2005.
- ¹⁴ Chen, H. et al. "Establishment of multiple sublineages of H5N1 influenza virus in Asia: Implications for pandemic control." *Proceedings of the National Academic of Sciences*, 103(8):2845-2850, Feb. 21, 2006.
- ¹⁵ "Laos: Poultry and Products: Avian Influenza, 2005." GAIN Report, Global Agriculture Information Network, US Department of Agriculture, Report No. LA5001, March 16, 2005.
- ¹⁶ "The top-down global response to bird flu." GRAIN (Barcelona), April 2006.
- ¹⁷ *Fowl Play: The poultry's industry's central role in the bird flu crisis*. GRAIN (Barcelona), February 2006.
- ¹⁸ Ibid.
- ¹⁹ Ibid.
- ²⁰ Ibid.
- ²¹ McLeod, Anni et al. "Economic and social impacts of avian influenza." Emergency Centre for Transboundary Animal Diseases Operations, Food and Agricultural Organization.
- ²² "Restoration of wetlands key to reducing future threats of avian flu." United Nations Environment Programme, April 11, 2006.
- ²³ Olsen, Björn et al. "Global patterns of influenza A virus in wild birds." *Science*, 312:384-388, April 21, 2006.
- ²⁴ "The top-down global response to bird flu." GRAIN (Barcelona), April 2006.