



Avian Flu: What to Expect and How Companies Can Prepare for It

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The avian flu that is steadily making its way around the globe will develop into a pandemic that will kill tens of millions, create chaos in companies and send the world economy into a tailspin.

Or it won't.

That uncertainty represents a huge challenge for governments, corporations and citizens worldwide: No one knows what will happen to the avian influenza virus in the coming months and years. Will it mutate into a strain that will allow people to readily infect others and sicken untold numbers? Or will it fizzle out?



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Nonetheless, many people are taking into account scenarios ranging from mild to severe in order to plan for what could turn out to be a calamity. With the news over the past few weeks that the flu has moved into a number of additional countries, faculty members at Wharton, health care professionals and risk consultants say it is important that companies assess how their organizations could be harmed by a pandemic and take preventive measures to mitigate the damage and keep their enterprises operating. Indeed, experts say companies should actually be planning for all sorts of risks and include efforts to prepare for a possible flu pandemic within that broader strategic plan.

Wharton management professor [Stephen Kobrin](#) attended sessions at the World Economic Forum in Davos, Switzerland, in January and heard executives and others outline the potential dangers of the bird flu. It became clear to him just how calamitous a pandemic could be.

"The concern is not simply with people getting sick and staying out of work," says Kobrin. "It has to do with a fairly substantial breakdown in infrastructure. If there is a pandemic, people will be reluctant to leave their homes. That means disruptions in food supplies, supply chains, mass-transit systems and information technology systems if the systems [fail] and IT people aren't there to fix them. The issue is, 'How do you operate in the context of turmoil?' You have to plan for a substantial breakdown in the physical and social infrastructure. The question companies should be thinking about is how to keep their businesses going."

Imagine just a few of the effects a pandemic would have on attendance at any number of venues -- high-rise offices; factory floors; airlines, buses and trains; schools; hospitals and doctors' offices -- as people stayed home either because they were already sick or feared becoming ill.

Wharton management professor [Peter Cappelli](#) recalls the strictures that were put in place in companies when he was visiting Singapore during the epidemic of severe acute respiratory syndrome, or SARS, in 2003. Each morning, some companies made employees report their body temperatures -- an indicator of whether they were infected with SARS -- before being allowed into their offices to work. Officials implemented a "buddy system" under which one employee was required to take the temperature of a co-worker to certify that the "buddy" was not lying about his or her thermometer reading.

"Infrared cameras were also in place to identify people with fevers," Cappelli says. "If you had a fever, you had to notify public-health officials. They would screen you for symptoms, then quarantine you at home if you were sick. If you were uncooperative, they would make you wear an ankle-bracelet. SARS was doing enough damage to the economy that there was a national sense they had to be on top of this -- and quickly."

It is noteworthy, though, that Cappelli himself weighed the risks and felt comfortable enough about his own safety to board an airplane and fly to Asia. "If you looked at the actual number of incidents -- a few cases in a population of four million -- the risk of getting SARS was pretty low," he says.

Robert E. Mittelstaedt Jr., dean of the W.P. Carey School of Business at Arizona State University and former director of Wharton Executive Education, agrees that disruption to workplaces would be immense if large portions of workforces stayed home during a pandemic. But he believes a more significant problem would be a sharp drop in consumer demand. "Two-thirds of our economy is sustained by consumer spending," says Mittelstaedt. "Buying cars and a lot of other items can be postponed indefinitely. Think about the entertainment sector. If we get to the point where this flu is shown to be transmissible [from person to person], it could have a massive economic impact."

[Howard Kunreuther](#), professor of decision sciences and business and public policy at Wharton, says a pandemic is "a risk that is very, very hard to predict. We don't have [much] information and there's a lot of uncertainty. Having said that, the consequences are that millions of people could be killed. If you have something that mirrors the 1918 epidemic -- we don't know how to even think about that."

The Basics

Here is what is known about the H5N1 avian flu as of this week: More than 200 million birds (domestic poultry and migratory birds) in Asia, the Middle East, Europe and Africa have died of the virus or been killed by authorities in an attempt to halt the virus's spread. Since 2003, there have been 92 confirmed cases of people dying from avian flu, mostly in Asia, by contracting the disease from contact with birds, according to the World Health Organization. At least another 170 have been infected. Since the beginning of February 2006, 13 countries on three continents have reported their first outbreaks of avian flu in birds. Despite this increased spread among domestic and wild birds, WHO stresses that human infection with the virus remains rare.

No vaccine has been developed to combat the H5N1 virus. The National Institutes of Health announced the beginning of clinical trials last year and they are continuing. Studies done in laboratories suggest that some of the prescription medicines approved in the United States for human flu viruses should work in treating avian influenza infection in humans, according to the federal government. However, flu viruses can become resistant to these drugs, so the medications may not always work. The H5N1 virus is resistant to amantadine and rimantadine, two antiviral medications commonly used for flu. Two other antiviral medications, oseltamivir and zanamivir, would probably work to treat flu caused by H5N1 virus, but additional studies still need to be done to demonstrate their effectiveness.

Even if scientists were to develop a vaccine, there is no guarantee that enough doses would be available in time because the production process -- using the current method of growing viruses in chicken eggs -- would take perhaps six months to a year, according to Neil Fishman, director of the department of healthcare epidemiology and infection control at the University of Pennsylvania Medical School.

"You would need hundreds of millions of eggs for the U.S. alone, not to mention the rest of the world," he says, adding that scientists have developed new tissue-based technologies that would allow for quicker vaccine production, but those technologies have not been approved by the U.S. Food and Drug Administration.

So far there have been at least two probable cases of the virus being transmitted from one human to another, according to Fishman, both of which occurred in Southeast Asia and were investigated by health authorities in 2004 and 2005. For a pandemic to occur, the virus would have to mutate into a strain that could easily -- or "efficiently" to use Fishman's clinical term -- allow it to pass from person to person. "What would be required to produce a pandemic would be efficient human-to-human transmission, and that hasn't happened yet," Fishman says.

Scientists disagree about the likelihood of a pandemic. "Some people look at the data and say, 'This virus has been around since 1997 and [a pandemic] hasn't happened yet, so I don't think it's going to,'" says Fishman, who is in charge of developing a flu preparedness plan for Penn. "Other people look at the same data and say, 'We are that much closer [to a pandemic].' That's an ongoing debate, and I really don't know what the correct answer is."

There were three influenza pandemics in the 20th century. The 1918-1919 Spanish flu caused 20 to 50 million deaths worldwide, 500,000 of them in the United States. The 1957-1958 Asian flu caused two million deaths globally, 100,000 in the United States. The 1968-1969 Hong Kong flu claimed one million lives worldwide, 70,000 in the United States.

Avian Flu Planning Committees

The possibility of a pandemic, no matter how uncertain, has prompted corporations and risk-management experts to think hard about how the flu could affect businesses.

"The hardest hit companies in any industry are likely to be those with worldwide operations, global supply chains, and/or international customers," states a report published in January 2006 by Marsh, a New York-based consultancy. "Already, some local, state, and national governments are setting in place plans to curtail travel, close schools, quarantine individuals and communities, and ban public gatherings." Such steps were taken during the SARS epidemic, especially in Asia where the disease was most prevalent.

The Marsh report notes that many businesses, especially large multinationals, have set up avian flu planning committees. Some are creating task forces combining their strategic planning, operations-continuity procedures, human resources and health services to adopt "event-specific" measures in anticipation of a pandemic. Others, particularly those in the food industry, are preparing marketing campaigns aimed at allaying fears about the use of their products, and thus protecting their brands, if a pandemic should occur.

Despite the high degree of uncertainty over the future course of the flu, Wharton's Kunreuther says companies have little choice but to plan. "We're all myopic. We have a hard time thinking about the future in the long run. We have a hard time taking steps today where the benefits occur over a number of years. That means all of us, as individuals and organizations, have to rethink what I call the NIMTOFF philosophy -- 'Not in My Term of Office.' That behavior makes it hard for organizations to do long-range planning."

Kunreuther adds, however, that planning for a pandemic should be just one component of an organization's overall approach to risk management. "The question I would raise is not how can companies prepare for the avian flu alone, but how can they take steps that could have a lot of other planning benefits for any number of risks," he says. "You should focus on how planning for a flu pandemic can help your organization on many different levels. That's also how I think about planning for terrorism or natural disasters."

Gary Lynch, national practice leader for business continuity management in the risk consulting practice at Marsh, echoes Kunreuther's view.

The number of inquiries about planning for the flu from prospective clients and discussions with existing Marsh clients has picked up sharply in the past month, he says, noting that the way in which companies react to the possibility of a pandemic fall into two camps. Some companies will spend some time and money on planning, but deep down inside they feel that fears of a pandemic are misplaced and that the virus will turn out to be another Y2K -- a much-hyped phenomenon that cost firms billions in planning but turned out to be a non-event.

Other companies, according to Lynch, are taking a more thoughtful, holistic approach. "They say, 'We have to address this and we have to look at this in a way that allows us to leverage whatever it is we do for other types of disasters.'"

These firms analyze "a landscape of threats," Lynch adds. "They are trying to move away from [focusing only on] individual threats. Independent of what the threat is, the outcome is going to affect four things -- people, technology and processing, their physical environment, and their relationships. So, if they can understand two things -- what their current risk-mitigation and transfer strategy offers and to what extent that will protect them and how they can model other threats -- they can get a sense what sort of adjustments they have to make in their risk-management philosophy."

Here's one example of the kind of thinking Kunreuther and Lynch are suggesting: Wharton's Kobrin recalls hearing an executive of a financial services firm telling participants at the World Economic Forum that his company had developed special software that, in the event of a pandemic, will allow its traders to execute securities transactions from their homes. Lynch says this step is certainly a positive one, but it is far from enough. It does not take into account what those traders will do if the broader energy and technology infrastructure -- the Internet, telephone lines and electrical power to their homes and apartments -- were to experience serious disruptions during a pandemic because employees servicing the infrastructure themselves were to stay home from work.

"Companies that think about [potential disaster] scenarios are going to be better prepared [for a pandemic] because they have thought about them ahead of time," notes Mittelstaedt, who serves on several boards of directors. "Yet it's very difficult to get people to sit down and do this." He adds that all boards conduct annual risk assessments to satisfy their auditors, but those risks are relatively routine, boilerplate topics, such as what would happen if the firm failed to keep pace with technology. "Rarely do risk assessments go into low-probability, high-impact events," says Mittelstaedt, even though these events "can have a significant impact."

Four Pandemic Scenarios

If a vaccine is developed to prevent people from contracting the H5N1 strain, several thorny issues would arise, according to [Mark V. Pauly](#), professor of health care systems at Wharton.

"It's quite likely that if there is a vaccine, it won't be perfectly protective to keep you from getting this virus. So one question is, 'Would it be better for organizations to prepare and stockpile a vaccine in advance than to try to organize provisions of a vaccine if the pandemic actually breaks out?' The other question is, 'Who should be vaccinated?' It's obvious that health personnel, rescue personnel and so forth will be prioritized in getting vaccinations. But among the general public you have to wonder if there will be hoarding and misallocations of vaccines. To avoid this 'I'm-going-to-grab-mine' phenomenon, it's important to put a plan in place."

What would be the impact of a major outbreak today? Fishman cites a 1999 study that predicted that if the current strain of flu were to morph into a pandemic, 43 million to 100 million people, or 15% to 35% of the population, would be infected in the United States. Outpatient medical care would be needed to serve the needs of 18 million to 42 million Americans. Between 314,000 and 733,000 Americans would be hospitalized and 89,000 to 207,000 would die. The health-related economic burden was estimated at \$71 billion to \$166 billion.

As for the effects on business, a study published in February 2006 by the Lowy Institute for International Policy, based in Sydney, Australia, lays out just how far-reaching and disruptive a pandemic would be. It says a pandemic "would be expected to lead to a fall in the labor force to different degrees in different countries due to a rise in mortality and illness; an increase in the cost of doing businesses; a shift in consumer preferences away from exposed sectors; and a re-evaluation of country risk as investors observe the responses of governments."

The Lowy study, titled "Global Macroeconomic Consequences of Pandemic Influenza," looked at four scenarios based on the severity of a pandemic. It found that even a "mild" pandemic (similar in scale to the 1968 flu) would claim 1.4 million lives worldwide and close to 0.8% of GDP (\$330 billion) in lost economic output globally. An "ultra" pandemic, defined by the researchers as worse in scope than the 1918 catastrophe, would result in the deaths of 142 million worldwide and a GDP loss of \$4.4 trillion, or 12%. Under the "ultra" scenario, some economies in the developing world could shrink by more than 50%. (The Lowy report also looks at the potential impact of a "moderate" pandemic like that of the Asian flu of 1957 and a "severe" scenario like the 1918 flu.)

John E. Calfee, a resident scholar at the American Enterprise Institute in Washington, D.c., who studies pharmaceuticals and health care policy, says he is "cautiously optimistic" that a pandemic will not occur. One reason he feels this way is that the avian flu has been around for close to a decade now, yet has not mutated to the point where it could be transmitted in large numbers from person to person. Calfee also cites the peculiar circumstances of the previous mammoth outbreak of avian flu (1918-1919) as a reason for hope.

The 1918 outbreak was horribly virulent but the conditions in which it spread were highly unusual. The transmission of the disease was accelerated in the trenches of World War I and in military hospitals and military facilities where soldiers lived in close quarters in less than ideal conditions. This means, says Calfee, that the virus of 1918 may have had vastly more opportunities to mutate in humans.

Today it is entirely possible that if the avian virus jumps to humans, the mutation process will make the virus more readily transmissible but the virus itself may be less dangerous. The reason is this: A virus is normally transmitted by people who are infected but not very sick; after all, they have to move around and interact with people in order to infect them. "But if you crowd people in hospitals or military field infirmaries, you can have people who are quite sick exposing other people to the virus," Calfee says. "Then you are spreading a virus that's lethal." However, conditions today are very different than they were during World War I. In addition, "a lot of people who died in 1918 died of secondary infections like pneumonia, which are treatable today."

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