

Researcher: Now is the time to take action on H5N1 avian flu, because the stakes are enormous

June 13 2024, by Matthew S Miller



Three colourized rod-shaped influenza A (H5N1/bird flu) virus particles. Credit: CDC and NIAID

Bird flu poses a massive threat, and the potential for a catastrophic new

pandemic is imminent. We still have a chance to stop a possible humanitarian disaster, but only if we get to work urgently, carefully and aggressively.

This will require a major collective shift in the way we approach infectious diseases management—one that embraces a [One Health](#) approach and prioritizes prevention of human infection before widespread infection happens, rather than responding rapidly once human cases become widespread.

As Canada Research Chair in Viral Pandemics and director of the M.G. DeGrootte Institute for Infectious Disease Research at McMaster University, I have spent my career studying the impact of previous pandemics, and developing new ways to prevent them in the future. The actions taken now will determine whether the highly pathogenic avian influenza (HPAI) H5N1 outbreak already affecting birds and mammals around the world takes hold in humans.

Global spread of H5N1

We've been watching the [global spread of this new strain of H5N1](#) for roughly five years, from the time it first appeared in wild birds and literally flew around the world. We have seen it adapt and move into domestic poultry flocks, causing millions of chickens, turkeys and ducks [to be destroyed to keep the virus at bay](#).

International concern about the potential of this virus to cause a [pandemic](#) increased significantly in 2022, when the HPAI H5N1 was confirmed to have adapted and [jumped to mammals](#) like foxes, skunks, ferrets and seals. These animals are more closely related to humans than birds, giving the virus a chance to learn how to infect us more efficiently. Now it's picking up speed.

By March, [H5N1 had infected dairy cattle in Texas](#). By the time the situation could be assessed, testing showed [20% of the milk supply](#) there had been touched by H5N1 (while remaining safe for consumption thanks to pasteurization), and infected cows could be found in almost every corner of the country.

In recent weeks, reports have identified H5N1 infection in [three dairy-farm workers in the United States](#), two with conjunctivitis ("pink eye") and, most recently, one with respiratory symptoms. Sadly, [someone in Mexico also recently died](#) from a closely related H5N2 [influenza virus infection](#). [There are almost certainly many more cases than these](#).

Dairy farms are at risk of becoming dangerous incubators for the virus because [mechanized milking](#) seems likely to be responsible for spread among cattle, and facility cleaning procedures often generate airborne droplets that pose a serious risk of human infection.

We have yet to see human-to-human transmission of this H5N1 virus, but the virus is always adapting to new hosts, and the early animal-to-human infections we have seen are giving the virus opportunities to learn how to thrive in the human body.

[Previous outbreaks of avian influenza have killed more than 50% of the people they infected](#). These numbers are more consistent with viruses [such as Ebola](#), rather than with seasonal influenza or even COVID-19. The potential for high human mortality is what makes this influenza such an urgent concern. There are ways to halt the march of H5N1, but whether they will be put to use is still an open question.

Many of the viruses that have caused recent unexpected outbreaks, [like Zika](#), would have been very difficult to prevent. Influenza viruses, however, are an all-too familiar pandemic risk, having already caused [four pandemics](#) between 1918 and 2009.

Given what we just experienced with COVID-19, letting bird flu take hold in humans would represent a spectacular failure to learn our lesson.

Preventing spread vs. limiting spread

People may wonder why it matters that we prevent a pandemic when we can limit spread and mitigate illness with masks, drugs and vaccines. It will not be that simple. When COVID-19 first emerged, we had no vaccines available for coronaviruses, and so the development of safe and effective COVID-19 vaccines was a steep challenge.

With H5N1, we'll be able to apply the same fundamental technologies we use to produce seasonal influenza vaccines by [adapting the formulation](#) to whatever form the virus may take in humans. But that can't happen instantly, and by the time bird flu has hit humanity, it may already be too late. Vaccines take time to produce, especially on a global scale, which would demand more than eight billion doses.

During the 2009 H1N1 swine flu outbreak, [the pandemic had already passed its peak by the time a vaccine was getting out](#) to the public—despite the considerable global infrastructure already in place to produce influenza vaccines.

The people most likely to suffer are people in remote and Indigenous communities, the poor, the frail and elderly, medically vulnerable individuals, the very young and the displaced.

Strategies are beginning to develop in many places around the world to prevent the virus from jumping into the human population, including [infection-control measures to protect farm animals](#) from exposure and using [personal protective equipment for farm workers](#).

Those whose jobs put them at high risk of exposure to H5N1 may need

to be offered vaccines and medications that can prevent exposures from blossoming into full-blown infections, in much the same way we selectively provide [rabies vaccines](#) to those whose work puts them in close contact with wild animals.

Though plans are taking shape, such measures can only be effective if people are willing to use them. We know how much resistance there was to masking and vaccines during the COVID-19 pandemic

Pushing back on bird flu

Pushing back the bird flu will need public buy-in and public resources. Prevention approaches must be sensitive to those most impacted. Farmers, hunters and others who are regularly exposed to potentially infected animals will need good information and education to understand why they must act. Approaches should be evidence-based and offer people options whenever possible. Mandates should be viewed as a last resort.

People whose livelihoods may be jeopardized by the cost of biosecurity measures will need resources to support them in taking actions that could potentially save millions of lives. All this demands new government policies, and enhanced cooperation and coordination between agencies responsible for farm animal, human and wildlife health.

[Canada has been taking encouraging steps in this direction](#), but alone cannot stop a [bird flu](#) pandemic. However, this is a unique opportunity to demonstrate international leadership in effective pandemic prevention approaches.

In the United States, it's critical that infections in farm workers are not concealed due to fears related to [immigration status or financial strain](#) because of lack of health insurance. Another huge risk in the wake of

COVID-19 is the politicization of issues related to infection prevention, where public opposition, anti-science rhetoric and misinformation could be as deadly as a major war. Our approach and messaging must be empathetic and sensitive to these realities to avoid further polarization.

In national security, terrorist attacks are considered failures of intelligence. After the tragic losses of 9/11, governments made [massive investments to improve security in airports and cities](#). These measures fundamentally changed travel and public events, and yet today we think little of yielding to rigorous measures that keep us safe from terrorism.

Preventing pandemics requires a similar mindset, starting with avian flu, where many millions are at risk. We must change our focus from response to prevention.

As with national security, the need for an outbreak response must be regarded as a failure to prevent. This is an hour of opportunity. We don't know how much or how little time we have, but the window to act is very small and the stakes are enormous.

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