

# How worried should the world be about bird flu in humans?

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A highly infectious strain of avian influenza is tearing through

commercial and backyard poultry flocks, causing egg prices to rise as sick chickens are culled across the United States.

Now, some experts are worried that the H5N1 [avian flu](#) might become humankind's next pandemic-causing pathogen, if the raging [virus](#) makes the leap from birds to humans.

That's because other mammals have started to pick up the avian flu, and mammal-to-mammal outbreaks of the H5N1 virus are also occurring in rare instances.

"We're always concerned when it's in mammals, just because they're closely related to humans," explained Dr. Ryan Miller, an infectious disease doctor at the Cleveland Clinic, in Ohio.

The red flag officially unfurled last week in a report published in the *Journal of the American Medical Association*, which noted the spread of avian flu into certain [mink](#) and seal populations, and assessed the threat of spread into humans.

"During the past 20 years, fewer than 900 confirmed human cases of H5N1 have been reported to the WHO [World Health Organization]," the report stated. "The historic case-fatality rate for human H5N1 infection has been high—more than 50%. But some experts say that's likely an overestimation because many mild or asymptomatic infections may go unreported."

"Lots of flu viruses circulate in birds but never pose major threats to humans," Dr. Amesh Adalja, a senior scholar at the Johns Hopkins Center for Health Security, in Baltimore, said in the *JAMA* report.

Still, "when you think about the steps that are related to the emergence of a new human influenza threat, the ability to infect mammalian species

is one of those steps," Adalja added.

The ongoing avian flu outbreak is now the largest on record in Europe and North America, according to the World Health Organization.

More than 58 million chickens have died of avian flu or have been culled among 317 commercial flocks and 441 backyard flocks in 47 states since last year, the U.S. Department of Agriculture reports.

A mink farm in Spain suffered an H5N1 epidemic last October, one of the first large outbreaks of the virus apparently driven by mammal-to-mammal transmission. Nearly 52,000 mink on the farm were culled as a result.

"These mink are jammed very, very closely together, by and large, and it spread among the mink," said Dr. William Schaffner, medical director of the National Foundation for Infectious Diseases. "Well, that's a little bothersome because this virus is not supposed to spread very much in mammals, although the mink have some viral receptors that are more accepting of this virus than some other animals."

Genetic analysis revealed that the strain spreading among the mink contained an uncommon mutation that could increase transmission among mammals, according to a report in the journal [Eurosurveillance](#). A similar mutation occurred in the virus behind the 2009 swine flu pandemic.

## **Wild birds infect domestic birds**

"Fortunately, all the human beings who worked on that mink ranch were tested and were found to be negative, so it didn't get to the people," Schaffner added.

And, Miller added, "It doesn't look like it's been spreading from the minks and other mammals to humans at this point, so that's reassuring."

The virus also appears to have spread among a herd of seals in New England, according to a report in the preprint journal [BioRxiv](#).

The ongoing avian flu epidemic is being spread by wild migratory birds that occasionally interact with domestic flocks during travels that span hundreds to thousands of miles, Schaffner said.

"They can intermingle with those domestic flocks and introduce the virus to the domestic flocks. Those domestic flocks, particularly the chickens, they get sick and die. And that's one of the reasons that our egg prices have gone up, because some of these bird flu strains have gotten into our commercial large domestic poultry plants," Schaffner said.

Avian flu typically doesn't spread into mammals, and even then an infected mammal rarely spreads the bug into other mammals, much less humans.

The risk to humans comes from the possibility that one of these avian flu strains will infect some animal—a pig, for instance—that also is susceptible to human influenza, Schaffner said.

"When the two of them are together in the pig, it's like being in a test tube. Those two viruses can exchange genetic components, and it's possible for a bird flu virus to pick up that genetic capacity from the human virus of being able to spread readily from person to person," Schaffner said.

"Now, if that happens, then you have an incipient pandemic because the world's population would be susceptible to that virus and it could spread

globally," Schaffner continued.

That risk is particularly enhanced with H5N1, Miller explained, because it's "an influenza type A virus, and they can change drastically if they merge with another type of flu that can spread in humans."

This sort of human outbreak occurs every 10 to 15 years, Schaffner said, noting that the 2009 [swine flu](#) pandemic was the last such episode.

## **Chances of a jump to humans still low**

"Could this virus acquire the genetic capacity to spread to infect people readily and spread among them? That's always a possibility," Schaffner added.

Other experts urge vigilance but think there's no immediate threat.

"It's a potential risk. The likelihood of that happening is, I think, still quite low compared to other risks that we have. But it's a real risk and it's something obviously we have to be prepared for, something we have to watch very carefully," said Dr. Aaron Glatt, chief of infectious diseases and chair of medicine at Mount Sinai South Nassau in Oceanside, N.Y.

It helps that the United States is emerging from its cold and flu season, with circulating rates of flu on the decline since the holidays ended, Miller said.

"The risk of it actually merging with one of those more transmissible human viruses is rather low right now," Miller explained.

The U.S. Food and Drug Administration says it is safe for humans to eat eggs or chicken, despite the avian flu outbreak. The chance of buying an

infected product is low, and proper storage and preparation further reduce the risk.

If the avian flu does make the leap into humans, Schaffner is confident that a vaccine could be made available.

Most types of flu vaccine are incubated in eggs, but the risk is low that avian flu could wipe out the egg stores needed to produce vaccine, Schaffner said.

"The chicken flocks that produce the eggs that we use to make vaccine are actually under shelter and they're guarded," Schaffner said. "In fact, their locations are pretty secret, so no mischief can happen to those flocks."

In addition, the mRNA vaccine technologies used to crack COVID-19 can be turned toward emerging [human](#) influenza strains, Schaffner said.

"This would free it up from the eggs and would allow manufacturers to develop the vaccine actually more rapidly than the traditional egg-produced vaccines," Schaffner said.

In the meantime, people can reduce their overall risk by getting their annual flu shot, and by taking personal steps to limit the spread of infectious diseases, Miller advised.

Meanwhile, [public health](#) and agricultural officials around the world will continue to track the spread of avian flu, the experts said.

"The World Health Organization organizes a global surveillance for all kinds of influenza strains that are out there all the time, both in humans, in animals and in birds," Schaffner said. "And we have the capacity to sequence these viruses to understand their genetic components and to do

that very, very rapidly. Our surveillance system, the radar that's out there getting early information, is so much better than it was 10 years ago."

**More information:** The U.S. Centers for Disease Control and Prevention has more about [avian influenza](#).

Kartik K. Venkatesh et al, Risk of Adverse Pregnancy Outcomes Among Pregnant Individuals With Gestational Diabetes by Race and Ethnicity in the United States, 2014-2020, *JAMA* (2022). [DOI: 10.1001/jama.2022.3189](#)

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