

Worker infected with H5N1 bird flu in Texas after cases found in US dairy cows

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In a press release issued on Monday, the US Centers for Disease Control and Prevention (CDC) said that a person working on dairy farms in Texas had contracted the highly pathogenic avian influenza (HPAI) virus (H5N1 bird flu) last week, making it the second case in the United States. The first occurred in Colorado in a person in contact with infected poultry in 2022.

The Texas Department of State Health Services (DSHS) reported the case to the CDC, noting that the infected person had direct exposure to dairy cattle presumed to be infected with avian influenza. The individual's only symptoms were conjunctiva, or inflammation of the tissue around the eyes. They tested positive for the flu and underwent a confirmatory testing with the CDC over the weekend. The infected individual is being treated with the antiviral Oseltamivir (sold as Tamiflu), used in infections caused by the flu virus, and was instructed to isolate.

The present case is the first involving a direct transmission from bovines to humans and is also the first time cows have shown susceptibility to this virus, surprising influenza virologists. Both the Texas health department and CDC issued similar statements, that although they were working to investigate how the virus began to spread among these animals and their handlers, they assured the public that person-to-person transmission remains extremely rare. They also said that initial genomic analysis indicated the virus has yet to change in any considerable way to make person-to-person transmission likely.

Senior White House officials are being apprised on the evolving situation through the Office of Pandemic Preparedness, underscoring the warnings voiced by public health experts who have cautioned that the avian flu poses a credible threat to human populations. In the context of the manufactured ending of the COVID-19 pandemic through the defunding and dismantling of public health surveillance systems, there is considerable trepidation among experts about this evolving threat.

As a 2022 report in *Think Global Health* noted,

Each time one species transmits the virus to another, it constitutes a spillover event. These myriad spillovers—among wild bird species, from wild birds to domestic birds, across birds to mammals, and from animals to humans—raise serious concerns about the potential for further adaptation and evolution of this influenza lineage and the continued risk associated with avian migration.

News of spread among cattle had preceded the spillover event involving the Texas dairy farm worker. Last week, the USDA's Animal and Plant Health Inspection Services (APHIS) informed health officials that samples of milk from sick cattle at four dairy farms had confirmed a strain of avian influenza. In their release, APHIS wrote, "Based on findings from Texas, the detections appear to have been introduced by wild birds. Initial testing by the National Veterinary Services Laboratory has not found changes to the virus that would make it more transmissible to humans."

Besides Texas, Kansas and Michigan have also recently reported H5N1 outbreaks among dairy cows. According to Michigan State Veterinarian Nora Wineland, it appears the cases in the state stem from infected cattle brought to a Michigan commercial farm on March 7. The animals in question became ill on March 20, when samples were submitted to the state lab confirming the HPAI virus.

Idaho and New Mexico have also recently reported outbreaks among dairy cows presumed to have been caused by H5N1. Although not lethal in cows, the illness presents with a decline in their milk production and reduced feeding until the infection resolves. Symptoms of their illness can last between 10 to 14 days, with some developing pneumonia and mastitis.

Dr. Fred Gingrich, cattle veterinarian and executive director of the American Association of Bovine Practitioners (AABP), told *Farm Journal*, "We understand right now that the primary impact of this disease is economic. Those herds lose about 20 percent of their milk production for 15 to 21 days, which is a huge economic loss."

He cautioned owners of dairy farms, "Don't hide it. We all need to work together to continue the investigation. If you have a sudden drop in appetite and milk production in your herd, the first person you should call is your veterinarian to get a diagnosis, whatever that might be. ... Even though we have these four positive samples, the investigation is ongoing," and involving multiple states. Also, cattle owners have been instructed to destroy the milk produced by infected cows to avoid it entering the food chain.

Although pasteurization (*see figure four in the link*) appears to be a very effective method to inactivate the virus, the CDC cautions that people "should not prepare or eat uncooked or undercooked food or related uncooked food products, such as unpasteurized (raw) milk, or products made from raw milk such as cheeses, from animals with confirmed or suspected HPAI A(H5N1)-virus infection." If a person is exposed to birds or other animals with

confirmed or suspected HPAI virus infection, they should be monitored under a medical supervisor for 10 days after their last exposure.

Despite the assurances offered by the CDC and various health agencies, the passage of the HPAI virus from cows into humans very soon after the introduction of the virus in cattle raises real questions about the potential for the HPAI virus to gain the ability to transmit among people. In particular, the 2020-2023 H5N1 outbreak affected every continent by February 2023 except for Australia and Antarctica. But in late 2023, H5N1 was discovered in Antarctica, leading scientists to speculate that a catastrophic breeding failure among animals never exposed to HPAI virus could ensue.

Since the outbreak began in 2020, tens of millions of birds have died from H5N1 influenza globally. Disease among farmed poultry has led to the culling of more than 100 million birds. Beside commercial poultry and wild birds, the virus has been found in mammals like grizzly bears, red foxes, coyotes, seals and dolphins. In February 2022, egg prices had soared due to the impact of the avian influenza pandemic driving down inventory.

Since 2003, not including the fatal case in the 21-year-old student in Vietnam who died of H5N1 bird flu last March, and the case in Texas, the World Health Organization (WHO) has confirmed 888 cases involving people across 23 countries. Of these, 463 died, a case fatality rate of 52 percent. In Indonesia, with 200 confirmed infections, 168 deaths have occurred (84 percent). However, the current strain circulating appears to have triggered fewer infections and by comparison milder disease. In 2022 and 2023, there have been only 14 documented human infections and only two deaths.

It has been estimated that sometime in the 1990s the H5N1 strain began to establish itself in Asian poultry populations. H5N1 was first detected in Guangdong Province, China, in 1996, when it killed some geese. It did not garner much attention until May 1997, when it killed six of 18 individuals at a live-poultry market in Hong Kong.

Prior to 2004, significant transmission between poultry and wild avian species were rare events. But between 2004 and 2006, the CDC reported that the largest increase in HPAI virus outbreaks in poultry and wild birds had occurred. The consequence was that HPAI H5N1 caused widespread mortality among wild birds and mammal populations across the globe.

By 2020, there was a marked global upward trend in HPAI H5N1 outbreaks. In a comprehensive review of the threat posed by HPAI H5N1 virus, the authors wrote,

In the years 2021 and 2022, a total of 54 countries documented outbreaks of H5N1 avian influenza in bird populations. Between January 2022 and June 27, 2023, the HPAI H5N1 virus was identified in over 7,000 wild birds across 50 states and in more than 800 commercial and backyard flocks in 47 states within the United States, marking the initial occurrences of such detections since 2016. The rapid and concerning spread of HPAI H5N1 among both domestic and wild bird populations is a

phenomenon that transcends continental boundaries.

Dr. Peter Marks, the FDA's director of the Center for Biologics Evaluation and Research (CBER), said on Monday, at the World Vaccine Congress being held this week in Washington, that he felt confident the US's stockpile of avian flu-specific vaccines would be effective if deployed. He added,

We believe that, if we needed to, they would be reasonably good matches. Just because of being on edge from COVID, there are a lot of people looking at what's going on here, and there's probably a pretty low threshold to pull the trigger here. This is one case we're a little luckier because it's a pathogen that we know.

However, Dr. Luciana Borio, a former FDA official, challenged Marks' optimism and questioned the vaccine's efficacy. The regimen is a two-shot series approved in 2007. The antibody response to the vaccine is expected to reduce the risk of getting avian flu by 45 percent. The more important question posed is how these vaccines would be distributed to international populations and what measures are being put in place to detect and prevent the emergence of a pandemic avian virus that readily transmits between people?

Jennifer Nuzzo, director of the Pandemic Center at the Brown University School of Public Health, told *Politico*,

The bigger picture is that this virus is not cooling off. We've been worrying about this virus for 20 years, more than 20 years. And in the last year, it has really been remarkable in how far across the globe it has been spreading and how many species it's been affecting.



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