

H5N1 avian flu virus found in cattle across six US states

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Since the confirmation of infections with the highly pathogenic avian influenza (HPAI) virus, also referred to as H5N1 and bird flu, among dairy cows from Texas and Kansas in late March, the virus has been detected in 16 herds from six states: Texas, Kansas, Michigan, New Mexico, Idaho, and most recently, Ohio. This also includes detection of the virus in an animal handler in Texas whose only symptom was eye inflammation, a condition known as conjunctivitis.

However, Reuters recently reported that the outbreak of influenza among cattle may have started much earlier in the month when “a mysterious illness affected about 40 percent of the state’s dairy herds,” according to Texas’ Agriculture Commissioner Sid Miller. Testing for Influenza was not routine, but now he suspects that it was the bird flu. “We were testing for every cattle disease we could think of and then somebody said, ‘What are all these dead birds doing around the dairies?’”

The latest outbreak of avian influenza is the same strain that has caused the spread of the virus across the globe since late 2020, killing millions of birds and crossing over to affect multiple mammalian species, including sea lions, minks, grizzly bears, red foxes, coyotes, seals, and dolphins. In October 2023, Alaska reported the first polar bear case, believed to be caused by the animal scavenging bird carcasses and consuming one infected with H5N1.

Since 2022, more than 65 million birds and poultry have been culled in the US. Most recently, egg producer Cal-Maine said last week that a positive test at one of their Texas egg farms forced the company to cull 1.6 million laying hens.

The addition of infected bovines marks the first time that the virus has been identified in these animals. The disease appears to be mild in cattle, causing a transient decline in their appetites, lower milk production and symptoms like low-grade fever and lethargy. Migratory waterfowl infected with the virus have been blamed for the avian-flu outbreak in Texas. An infected bird can release viruses through its saliva and feces for up to 10 days. Contact with infected birds or surfaces contaminated by their droppings, saliva or feathers appear to be the biggest risk factor for contracting avian influenza. These birds are expected to make their way up north into Canadian forests and lakes to their nesting grounds.

Although the HPAI virus has been detected in cattle, it has yet to be determined if there has been respiratory transmission among cattle or from infected cattle to the worker with conjunctivitis. These questions need to be urgently addressed.

At a meeting organized last Thursday by the World Organization for Animal Health and the UN’s Food and Agricultural Organization, US Department of Agriculture official Suelee Robbe Austerman explained, “Right now, we don’t have evidence that the virus is actively replicating within the body of the cow other than the udder.” USDA’s Mark Lyons suggested that the virus could potentially be transmitted by contamination of workers’ clothing and gloves or the suction cups that are attached to cow udders during milking.

Clearly, the presence of dead infected birds in the fields adjacent to the cattle underscores the difficulties of protecting farm animals. However, it has yet to be ascertained how prevalent the virus is among cattle or the routes of transmission through which cattle are being infected. Some have suggested the water troughs could be a common source for viral transmission. These animals are kept together in close quarters and the virus can be present in their excrement.

Similarly, the affected human being, who is in direct contact with cows, may have been infected through self-inoculation by simply touching his eyes. These workers are not offered personal protective equipment to protect them from these forms of zoonotic infections. They are also not being tested routinely and asymptomatic or mild cases may be occurring under the radar, providing the virus opportunities to adapt itself to the human host.

The HPAI virus among cows has been little studied. Richard Webby, a virologist and expert on avian influenza at St. Jude Children’s Research Hospital, told *MIT Technology Review*, “Exactly what happens when an avian flu virus replicates in a cow and potentially transmits from cow to cow, we actually don’t have any idea at all.”

The virus that has infected cattle in Texas and the animal handler has been sequenced and belongs to clade 2.3.4.4b of H5N1. In particular, the Centers for Disease Control and Prevention (CDC) has found that the virus from the worker has a mutation with known links to host adaptation that has been previously detected in people and other mammals. However,

the CDC assured the public that they haven't found any markers associated with influenza antiviral resistance and noted that "the virus sequence indicates it is closely related to two existing HPAI A(H5N1) candidate vaccine viruses that are already available to manufacturers."

Such reassurances are of little force, given the context of the ongoing COVID pandemic, its cover-up in the media and failure by public health agencies and the government to address it, and its deadly and debilitating ramifications like Long COVID, which is sickening millions with chronic neurologic and cardiovascular symptoms.

It is clear that the finding of H5N1 among bovine has unsettled the CDC. But agency officials have not taken these developments in any serious fashion or proposed to redirect much needed public health funding for an international approach to addressing surveillance and preventative measures. Instead, the main talking point supplied by public health authorities to the corporate press is that human to human transmission is unlikely and the current strain appears to lead to mild disease by comparison to the earlier clades of the H5N1 virus.

Since H5N1 was first found in humans in 1997 in Hong Kong, it has infected almost 900 people and had a case fatality rate of over 50 percent. However, with the current lineage of the virus, virulence in humans and transmission to humans appears to have declined. In 2022 and 2023, there were only 14 documented human infections and only two deaths. Although this is welcome news, should this strain evolve efficient human-to-human transmission via respiratory aerosol pathways, a case fatality rate of over 10 percent would be catastrophic.

This issue bears reviewing.

For COVID, case fatality in the first few months varied between two and thirty percent, but that figure has declined to below 0.3 percent after August 2022. Still, nearly 30 million deaths have been attributed to SARS-CoV-2. It has been repeated infections among elderly and those with multiple comorbidities that have contributed to the ongoing death toll, while the impact of repeat infections is felt in uncounted numbers of deaths attributed to cardiovascular or neurological causes.

The 1918 Influenza pandemic, with a case fatality rate of nearly two percent, killed around 50 million people worldwide, disproportionately affecting healthy young adults. A case fatality rate of 10 percent would make any previous pandemic pale by comparison, with the exception of the black death that ravaged Europe and North Africa from 1346 to 1353, killing 30 to 60 percent of the population.

In the modern era there are at least seven worldwide pandemics that killed over one million people:

- The 1889-1890 pandemic (influenza or human coronavirus) killed one million
- 1918 Influenza pandemic (Spanish flu) killed 17 to 100 million

- 1957-1958 Influenza pandemic (Asian flu) killed one to four million

- Hong Kong flu (1968-1970) caused by Influenza A H3N2 killed one to four million

- HIV/AIDS epidemic (1981 to the present) killed 42 million

- COVID-19 Pandemic (2019 to the present) killed seven to 35 million

Notably, influenza plays a major role in the ongoing threats to human populations as evidenced by the major epidemics documented in the industrial age. The threats posed by coronaviruses and similar respiratory pathogens in the current era of globalization and climate catastrophe only elevate the threat for another pandemic-potential pathogen to run roughshod over the global human populations.

With respect to H5N1, in a recent interview published in *News STAT*, Dutch virologist Ron Fouchier, explained the implication of the infection of cows with HPAI virus: "We have never seen this scale of infections in mammals, and in such diversity of mammals. We have now seen more than 40 species of mammals infected during the last outbreaks, which is unprecedented. We know the flu is unpredictable. But we also know that adaptation of virus to mammals is not a good thing ... And so the high presence in nature, and the large number of infections I find concerning, despite the fact that we think current zoonotic [transmission into humans] risk is low. And that's because these viruses are changing. And we have no experience of how H5 behaves in all these species. We can't predict what's going to happen."

And as these developments are ongoing, the right-wing reaction to the COVID pandemic and attempts to blame Chinese authorities by promoting grotesquely false lab-leak conspiracies are essentially handcuffing the very same researchers whose work and collaboration is urgently required to address important questions posed by these ongoing threats.



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