

Highly pathogenic avian influenza A (H5N1) virus infection in a dairy worker in Texas

Kenneth Nugent MD

The Centers for Disease Control and Prevention (CDC) recently reported a person infected with the highly pathogenic avian influenza A (H5N1) virus.¹ This person had exposure to dairy cattle in Texas, and presumably these cattle were infected with this virus. The patient's only symptom was conjunctivitis. There were no respiratory symptoms, and the illness did not appear to be severe. The first case in the United States was reported in 2022 in Colorado. The first reported cases in 2024 were in Cambodia.² This report involved four patients, including three children and one adult. One of the children died. These individuals had a recent exposure to sick or dead poultry; there is no evidence for person to person spread of this virus. The H5N1 virus analyzed in Cambodia was in a different HA clade (a subdivision of influenza viruses based on the similarity of their hemagglutinin [HA] gene sequences) than the viruses identified in the United States and other countries. The H5 clade in Cambodia was 2.3.3.1c; the H5 clade in the United States is 2.3.3.4b.

Avian influenza occurs in multiple wild birds and in commercial and backyard poultry. Periodically dairy cows are infected, and this has been reported in both Texas and Kansas by the United States Department of Agriculture. Milk collected from sick cattle in two dairy farms in Kansas and one dairy farm in Texas tested positive for this virus. Genetic analysis of these viruses has not found any mutations which would potentially make these viruses resistant to the current antiviral medication used in influenza infections.

Studies in live bird markets in Vietnam have reported that nearly 40% of samples were positive for influenza A viruses.³ These infections cause animals and birds to

shed virus in saliva, mucus, and feces. Human infection can occur when virus gets into the person's, eyes, nose, or mouth or when it is inhaled.⁴ Patients with possible influenza infection should have medical evaluation and testing. Clinical symptoms range from a mild illness with cough, sore throat, conjunctivitis, fever, rhinorrhea, fatigue, myalgias, and arthralgias to moderate to severe illness with shortness of breath, altered mental status, and seizures. Complications include acute respiratory distress syndrome, multiorgan failure, sepsis, and meningoencephalitis. This virus can be identified in a nasopharyngeal swab by a reverse-transcription polymerase chain reaction assay using H5-specific primers and probes. Workers with a probable infection should receive empiric treatment with oseltamivir as soon as possible even before testing results are available. Workers with an increased risk of exposure need to use appropriate personal protective equipment and consider prophylaxis for unprotected exposures. Clinicians should consider avian influenza A infection in patients with respiratory symptoms and discuss work activities and exposure to birds and animals.

The CDC recommends that people should avoid unprotected exposure to sick and dead animals, including wild birds, poultry, wild animals, and domestic animals, including cattle. They should avoid exposure to raw milk, litter, and other material contaminated by birds and animals. Commercial milk should be safe. People should not eat uncooked or undercooked meat products.

A report published by CNN on April 3, 2024, indicated that since the start of this outbreak of bird "flu" in January 2022, more than 82 million poultry in 48 states have been affected. Cases have also detected in 9,253 wild birds, although the true number is probably much higher. These outbreaks have substantial economic consequences and have potentially exposed multiple workers to this virus. In addition, circulating viruses could undergo mutation and have

Corresponding author: Kenneth Nugent
Contact Information: Kenneth.Nugent@ttuhsc.edu
DOI: 10.12746/swrccc.v12i51.1301

increased infectivity in humans.⁵ For example, the H1 N1 virus which caused severe 2009 pandemic had genetic material from birds, swine, and human viruses.

Keywords: Avian influenza A virus, human infection, birds, cattle, live bird markets

Article citation: Nugent K. Highly pathogenic avian influenza A (H5N1) virus infection in a dairy worker in Texas. *The Southwest Respiratory and Critical Care Chronicles* 2024;12(51):33–34

From: Department of Internal Medicine, Texas Tech University Health Sciences Center, Lubbock, Texas

Submitted: 4/1/2024

Accepted: 4/10/2024

Conflicts of interest: none

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

REFERENCES

1. Centers for Disease Control and Prevention. Highly pathogenic avian influenza A (H5N1) virus infection reported in a person in the U.S. <https://www.cdc.gov/media/releases/2024/p0401-avian-flu.html>. Accessed 4-3-2024.
2. Centers for Disease Control and Prevention. First human influenza A(H5N1) (bird flu) virus infections in Cambodia reported for 2024. <https://www.cdc.gov/flu/avianflu/spotlights/2023-2024/cambodia-human-reported-2024>. Accessed 4-3-2024.
3. Centers for Disease Control and Prevention. New study highlights importance of bird flu surveillance in live bird markets. <https://www.cdc.gov/flu/avianflu/spotlights/2023-2024/bird-flu-surveillance>. Accessed 4-3-2024.
4. Centers for Disease Control and Prevention. Highly pathogenic avian influenza A(H5N1) virus in animals: interim recommendations for prevention, monitoring, and public health investigations. <https://www.cdc.gov/flu/avianflu/hpai/hpai-interim-recommendations.html>. Accessed 4-3-2024.
5. Centers for Disease Control and Prevention. Technical update: Summary of analysis of genetic sequences of highly pathogenic avian influenza A (H5N1) viruses in Texas. <https://www.cdc.gov/flu/avianflu/spotlights/2023-2024/h5n1-analysis-texas.htm>. Accessed 4-3-2024.