Factsheet

Novel Highly Pathogenic Avian Influenza A (H5N1)

Information current as of 7/8/24

Summary

At this time, the best protection against H5N1 is wearing personal protective equipment when in contact with infected animals or materials, consuming only pasteurized (not "raw") milk products, fully cooking animal products, practicing good hand hygiene, and isolating or quarantining if directed by a provider or public health professional. Agricultural workers or other individuals who may have been exposed to infected animals or infected animal products (eg, slaughterhouse workers, raw milk transporters, veterinarians, etc.) who are experiencing conjunctivitis (eye redness) or flu-like symptoms should contact their health department or healthcare provider for testing.

Background

Wild birds are the natural reservoir for influenza A viruses. These viruses are well adapted to the bird hosts, and therefore are called avian influenza (AI) viruses, in contrast to human-adapted influenza A viruses that cause seasonal flu.[1] AI viruses can be of many genotypes based on their surface antigens—hemagglutinin (H) and neuraminidase (N)—and are frequently found in both wild birds and domestic poultry. Genotypes that cause little or no apparent illness are referred to as low pathogenic avian influenza (LPAI).[2] On occasion, LPAI genotypes can acquire a mutation that makes them highly pathogenic to poultry and other birds, resulting in near 100% mortality. These are collectively referred to as highly pathogenic avian influenza (HPAI). LPAI viruses are often implicated in outbreaks in poultry and pig farms in the US and globally.[3]

HPAI of the H5N1 genotype was first discovered in the late 1990s in China. In 2002, an outbreak in Hong Kong caused the first recognized human outbreak.[4] Since then, a total of 912 human cases have been detected across 24 countries with a greater than 50% case fatality ratio.[5] Globally, human H5N1 cases peaked during the 2015 Egypt outbreak, and since then there have been very few human cases detected.[6] However, since 2022, a new panzootic of H5N1 has circulated in birds that has also caused outbreaks among several types of mammals, often with high mortality, increasing the possibility of spillover events and human H5N1 outbreaks.[7]

The range of symptoms experienced by humans infected with novel influenza A viruses varies and can be difficult to predict. Human disease can vary from no symptoms to mild illness such as conjunctivitis, fever, and cough, to severe conditions like rapid-onset pneumonia or acute respiratory distress syndrome. Novel influenza A viruses are of significant public health concern due to the lack of existing immunity in the human population, and the potential for them to be highly transmittable and cause a wide range of disease in humans.[8]

Human Infection Prevention and Control

Poultry farmers and workers, backyard bird flock owners, livestock farmers and workers, slaughterhouse workers, veterinarians and veterinary staff, and other workers and responders may be at increased risk for H5N1 exposure. According to the Centers for Disease Control and Prevention (CDC) recommendations, farmers, workers, and responders should avoid unprotected, direct physical contact or close exposure with sick or dead animals or their materials. This includes carcasses, feces, milk, or litter. When in direct contact with these materials, farmers, workers, and responders should wear recommended personal protective equipment such as an N95 filtering facepiece respirator, eye protection, and gloves, and perform thorough hand washing after contact.[9]

In healthcare settings, clinicians should consider the possibility of HPAI A(H5N1) virus infection in persons with signs or symptoms of conjunctivitis or acute respiratory illness who have relevant exposure history. For healthcare professionals treating patients with suspected or confirmed novel influenza A infection, current CDC guidance recommends contact and airborne precautions in addition to standard precautions.[10],[11]A list of case definitions for novel influenza A virus are available on the CDC website.[12] These recommendations may change as the situation evolves.

Laboratory Testing and Diagnosis

The same tests used for seasonal flu would most likely detect H5N1 viral infections because both viruses are influenza A; however, these standard tests cannot determine if the strain is H5N1. For patients presenting with flu-like symptoms and exposure to animals affected with H5N1, dairy farms, or unpasteurized dairy products, providers should consider ruling out H5N1 by collecting an additional specimen to test for influenza A H1N1 or H3N2.[13] Most healthcare facilities have the capacity to complete H1N1 and H3N2 testing, as these subtypes commonly circulate among humans. If a test is positive for influenza A and negative for H1N1 and H3N2, this may indicate H5N1 infection, and specimens should be sent to the state health department for H5N1 testing. There are a total of 99 public health laboratories across the US that are equipped with the subtyping assays needed to detect novel H5N1. The CDC is also fully equipped to complete confirmatory testing as needed.[14]

Treatment

CDC's preliminary analyses of A(H5N1) viruses indicate that the current FDA-approved flu antiviral medications are likely effective against this virus.[3] Interim CDC guidance states that all patients with possible H5N1 infection should be treated with antivirals as soon as possible. Treatment should not be delayed pending test results, even if more than 48 hours have elapsed since symptom onset. For outpatients, oseltamivir (Tamiflu) is the preferred antiviral agent, administered twice daily for a duration of 5 days, regardless of symptom onset timing. For patients hospitalized with severe pneumonia, clinicians should consult the CDC Influenza Division in partnership with their state health department. Healthcare providers should exercise clinical judgement, particularly regarding patients with resolving symptoms, when determining the need for antiviral therapy.

Vaccines

Currently, seasonal flu vaccines do not protect against the novel H5N1 strain. However, human vaccination against H5N1 is not recommended or available at this time, as H5N1 continues to be mostly an animal health issue. If vaccination becomes necessary, the Biomedical Advanced Research and Development Authority's National Pre-pandemic Influenza Vaccine Stockpile , in partnership with CDC, the US Food and Drug Administration (FDA), and the National Institutes of Health (NIH), has prepared relevant candidate virus vaccines, appropriate medical stockpiles, and industry contracts to streamline development, clinical trials, scale-up, and deployment of vaccines for the public.[15,16]

Although US public health and medical agencies are engaged in constant preparedness initiatives to reduce the time necessary to make a vaccine readily available in the event of a human H5N1 outbreak, vaccines would likely not be available for weeks to months, and nonpharmaceutical initiatives such as isolation, quarantine, and masking would likely still be a necessary aspect of the public health response. As of May 30, 2024, the US has ordered 4.8 million doses of a cell-based, adjuvanted vaccine for H5 strains of influenza from CSL Seqirus.[17]

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