Human Avian Influenza A(H5N1) Quicksheet

November 18, 2024

BACKGROUND

H5 avian influenza is widespread in wild birds worldwide and is causing outbreaks in poultry and U.S. dairy cows, with recent human cases in U.S. dairy and poultry workers. A multi-state outbreak of avian influenza A(H5N1) ("H5N1 influenza") infection in dairy cows was first reported on March 25, 2024. The H5N1 influenza infections in California dairy cows were confirmed on August 30, 2024, and the first human cases of H5N1 influenza infection in California dairy workers were confirmed on October 3, 2024.

Additional background information from the Centers for Disease Control and Prevention (CDC):

- Information on avian influenza
- Avian influenza in dairy cows

For information about other variant influenza viruses, another type of novel influenza virus, please see the California Department of Public Health (CDPH) Variant Influenza Quicksheet.

OVERVIEW OF HUMAN H5N1 INFLUENZA INFECTIONS

Avian influenza A viruses do not normally infect people, but rare cases of human infection have occurred with some avian influenza viruses, including H5N1 influenza. Illnesses in humans from these infections have ranged in severity from no symptoms or mild illness (e.g., eye infection, upper respiratory symptoms) to severe disease (e.g., pneumonia) that resulted in death. To date, all U.S. human H5N1 influenza cases have been mild and no human-to-human transmission of H5N1 influenza virus has been detected in the United States.

Human infections with avian influenza viruses have occurred most often after close or lengthy unprotected contact (i.e., not wearing gloves, respiratory protection or eye protection) with infected birds or places that sick birds or other animals, their saliva, mucous and feces have touched. In the current outbreak, human infections with avian influenza viruses have happened through an intermediary animal, such as infected dairy cows and their unpasteurized (raw) milk or infected poultry.

Human infections with avian influenza viruses can happen when virus gets into a person's eyes, nose or mouth, or is inhaled. This can happen when a person touches something that has virus on it and then touches their mouth, eyes or nose, or possibly when virus is in the air (in droplets or possibly dust) and a person breathes it in. The spread of avian influenza viruses from one infected person to a close contact is very rare, and when it has happened, it has not led to sustained spread among people. H5N1 and H7N9 viruses have caused the majority of avian influenza infections in people. More information about avian influenza in humans is available at CDC's webpage on Avian influenza Virus Infections in Humans.

Additional information on avian influenza infections:

- Avian and Other Zoonotic Influenza (WHO)
- Avian Influenza (OIE)

CLINICAL AND EXPOSURE INFORMATION

Clinical Criteria:

Symptoms of H5N1 human influenza infection can include:

- Eye redness (conjunctivitis)

- Fever (temperature of ≥100°F [37.8°C] or feeling feverish)*
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Headaches
- Fatigue
- Shortness of breath or difficulty breathing

Less common signs and symptoms include diarrhea, nausea, vomiting, or seizures.

*Fever may not always be present

Exposure Criteria (within the 10 days prior to illness onset):

- **Exposure to animals infected with H5N1 influenza virus** (defined as follows):
  - Close contact (within six feet) with infected animals; such exposures can include, but are not limited to: handling, slaughtering, defeathering, butchering, culling, caring for, or milking; **OR**
  - Preparing or consuming raw animal products, or consuming uncooked or undercooked food or related uncooked food products, including unpasteurized milk, from infected animals; **OR**
  - Direct contact with surfaces contaminated with feces, unpasteurized milk or other unpasteurized dairy products, or animal parts (e.g., carcasses, internal organs) from infected animals; **OR**
- **Exposure to an infected person:** Close (within six feet) unprotected (without use of respiratory and eye protection) contact with a person who is a confirmed, presumptive, or symptomatic suspected H5N1 influenza case (e.g., in a household or healthcare facility); **OR**
- **Laboratory exposure:** Unprotected exposure to H5N1 influenza virus in a laboratory.

Human Infectious Period: Until further data are available, the infectious period should be considered to be from one day before symptom onset until resolution of eye infection/redness, any fever has been gone for 24 hours without the use of fever reducing medication, and other symptoms are mild and improving.

REPORTING

Immediately notify CDPH of suspect cases by calling the Immunization Branch (510) 620-3737. After hours, contact the CDPH Duty Officer (916) 328-3605. Please enter all suspected, presumptive, and confirmed H5N1 influenza cases into CalREDIE using the "Influenza-Novel Strain" condition.

The CDC Human Infection with Novel Influenza A Virus Case Report Form should be completed for all presumptive and confirmed cases of H5N1 influenza infection as soon as possible. The CDC Human Infection with Novel Influenza A Virus Case Report Form can be obtained via the CalREDIE Document Repository or by emailing InfluenzaSurveillance@cdph.ca.gov. Completed forms should be uploaded into the patient's record in CalREDIE or emailed to InfluenzaSurveillance@cdph.ca.gov and AvianInfluenza@cdph.ca.gov.

TESTING

If a person who meets the exposure criteria above develops symptoms that could be consistent with H5N1 influenza infection within 10 days of exposure, they should be tested.

Specimens should ideally be collected within 24–72 hours of symptom onset and no later than 10 days after symptom onset. Testing after 10 days from symptom onset can be considered on a case-by-case basis and in discussion with CDPH.

Polymerase chain reaction (PCR) testing for H5N1 influenza is available at some local public health laboratories (PHL), the Viral and Rickettsial Disease Laboratory (VRDL) at CDPH, and CDC. Laboratories should NOT attempt to perform viral culture on specimens from patients with suspected or laboratory-confirmed H5N1 influenza infection. For additional testing guidance see the VRDL Test Page - Novel/Avian Influenza Virus (human) PCR (ca.gov). Although some commercial laboratories now perform H5 subtyping, testing via a PHL is recommended for persons who meet the symptom and exposure criteria for H5N1 influenza in order to expedite public health response.

Specimen collection and specimen types:

- Specimens should be collected using swabs with synthetic tips (e.g., polyester or Dacron®) and an aluminum or plastic shaft. Swabs with cotton tips and wooden shaft are NOT recommended.
- Specimens collected with swabs made of calcium alginate are NOT acceptable.
- Place swab(s) in specimen collection vial containing 2–3 mL of viral transport media (VTM) or universal transport media (UTM); tighten cap to avoid leakage.
- For all patients, collect the following respiratory specimens:
  - A nasopharyngeal swab; AND
  - If feasible, also collect separate nasal and oropharyngeal swabs combined in a single transport media vial.
- Patients with conjunctivitis should have both a nasopharyngeal and conjunctival swab specimen collected.
- If conjunctivitis is present in both eyes, collect separate swabs from each eye and combine the swabs in a single transport media vial.
- Patients with severe respiratory disease also should have lower respiratory tract specimens collected such as an endotracheal aspirate, bronchoalveolar lavage, or sputum.
- For severely ill persons, multiple respiratory tract specimens from different sites should be obtained to increase the potential for H5N1 influenza virus detection.

Specimen storage and handling:

- Freeze or refrigerate specimens after collection. Ship refrigerated specimens to VRDL on cold packs. Ship frozen specimens to VRDL on dry ice.
- Specimens submitted to local PHLs should follow specimen submission procedures for that laboratory.
- Specimens submitted to VRDL must be accompanied with a hard copy of the completed VRDL General Purpose Specimen Submittal Form (PDF) or a form generated in the VRDL Lab Web Portal.

Suspect case information to collect and submit:

The following information should be obtained for suspected human cases and should be provided to the CDPH Immunization Branch and VRDL at the time the specimen is shipped to a PHL capable of performing H5 subtyping:

- Basic demographic information:
  - Illness onset date, date illness reported to public health, signs and symptoms, disease severity, and specimen collection date
  - Animal and animal product contact history
  - Workplace exposure information (CalConnect exposure ID or farm ID)
  - Contact with sick animals, and type of sick animal
  - Contact with human H5N1 influenza case
  - Household member information
- Healthcare received for illness
- Isolation status
- Prophylaxis information
- Influenza testing results, if available

HOME ISOLATION FOR PERSONS WITH SUSPECTED, PRESUMPTIVE OR CONFIRMED H5N1 INFLUENZA INFECTION

To date, there have been no documented instances of human-to-human transmission of the H5N1 influenza virus currently circulating in US poultry and dairy cows, but limited human-to-human transmission of other H5N1 influenza strains has occurred rarely in other countries. In addition, animal studies suggest this virus is not capable of spreading efficiently among people via respiratory aerosols compared to seasonal influenza viruses. Based on currently available information, the following recommendations apply to home isolation of non-hospitalized suspected cases until H5N1 influenza infection is ruled out and to non-hospitalized presumptive, probable or confirmed cases until release from isolation.

Isolation at home:

- Stay home unless it is necessary to see a healthcare provider or go to work if the local health department has not recommended work exclusion.
- If taking influenza antiviral medication, the ill person and their household contacts should continue to take it as prescribed unless instructed to stop.
- If living with other people (or pets), the ill person should:
  - Avoid contact with other household members and pets to the extent possible.
    - Wear a well-fitting mask for source control when indoor contact with other household members can't be avoided.
    - Cover any coughs or sneezes and clean hands with soap and water afterwards.
    - Try to take extra care to avoid contact with people at increased risk for complications from seasonal influenza virus infections.
  - Clean hands with soap and water frequently, particularly before contact with other household members.
    - If soap and water are not available, use a 60% alcohol-based hand sanitizer to clean hands.
    - Other household members should also clean their hands frequently.
  - Avoid touching the eyes if conjunctivitis is present.
  - Clean and disinfect frequently touched items and surfaces at least daily using household disinfectant or wipes.
  - Avoid sharing bedding, towels and wash cloths with others, particularly if there has been contact with the eyes, and launder such items before use by others.
  - Avoid sharing personal items with others, particularly items that have had contact with the eyes.

When to discontinue isolation:

- Isolation can be discontinued if H5N1 influenza has been ruled out by a documented negative test result for influenza A and, ideally for A(H5), for persons with previously documented H5N1 influenza infection, by rRT-PCR testing at a PHL.
- If H5N1 influenza is confirmed, isolation should continue until:
  - Any eye infection, including redness (excluding subconjunctival hemorrhage) or drainage, is resolved;
  - Any fever (temperature of 100 degrees Fahrenheit or 37.8 degrees Celsius or higher) has been gone for at least 24 hours without the use of fever reducing medication; AND
  - Other symptoms are mild and improving.

Modified workplace isolation:

- If individuals feel well enough to work, suspected, presumptive, and confirmed cases may work if they and their coworkers:
  - Wear appropriate recommended PPE while working; and
  - Wash hands frequently with soap and water or if soap and water aren't available, a 60% alcohol-based hand sanitizer to clean hands; and
  - Wear well-fitting facemasks while together in breakrooms or other areas where PPE is typically not worn, including shared transportation to and from work.

General recommendations:

- Ill persons should monitor their symptoms and seek prompt medical attention if their illness worsens (e.g., difficulty breathing).
- If healthcare is needed, ill persons should inform healthcare providers that they have, or are being evaluated for, H5N1 influenza, and to wear a respirator or facemask if entering any healthcare facility.

HEALTHCARE FACILITY INFECTION PREVENTION AND CONTROL RECOMMENDATIONS FOR H5N1 INFLUENZA INFECTION

If a person with suspected or confirmed H5N1 influenza infection is referred to a healthcare facility, the healthcare facility should be alerted prior to patient arrival so appropriate infection control measures can be planned and immediately implemented. The ill person should be advised to wear a facemask on arrival.

If a patient with suspected or confirmed H5N1 influenza infection presents to a healthcare setting, healthcare providers should:

- Immediately mask the patient and place them in an airborne infection isolation room (AIIR) with the door closed. While in an AIIR the patient's mask may be removed.
  - If an AIIR is not available, place the patient in a single-patient room with the door closed and have the patient remain masked.
- Use personal protective equipment that includes:
  - Respiratory protection (fit-tested N95 respirator or higher level of protection)
  - Eye protection (goggles or face shield)
  - Gown and gloves
- Use diligent hand hygiene before and after contact with the patient.
- Limit room entry to essential personnel. Limit patient transport outside their room.
- If a non-AIIR room is used, after the patient leaves, the room should not be reused and unprotected individuals should not enter until sufficient time has elapsed per CDC guidance.

For additional infection control guidance, such as management of exposed healthcare workers, visitor policies, environmental cleaning, and caution with aerosol-generating procedures, please refer to CDC Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation for Infection with Novel Influenza A Viruses Associated with Severe Disease

For applicable Cal/OSHA requirements in healthcare settings, please see California's Aerosol Transmissible Diseases standard.

RECOMMENDATIONS FOR INFLUENZA ANTIVIRAL TREATMENT

- **Symptomatic persons with H5N1 influenza exposure:** Persons with potential exposure to H5N1 influenza who develop compatible signs and symptoms should receive empiric influenza antiviral treatment with oseltamivir as soon as possible. Clinical benefit is greatest when antiviral treatment is administered early, especially within 48 hours of illness onset.
- **Hospitalized patients** who have confirmed, presumptive, or suspected infection with H5N1 influenza infection, should receive antiviral treatment with oral or enterically administered oseltamivir as soon as possible regardless of time since illness onset. Antiviral treatment should not be delayed while waiting for laboratory testing results. These patients should receive longer duration of treatment based on clinical judgement (10 days).
- **Additional recommendations** from the CDC-issued Emergency Use Instructions (EUI) that differ from those for seasonal influenza oseltamivir treatment include initiation of treatment beyond 48 hours of symptom onset, and treatment and dosing regimens for term neonates under 2 weeks of age and preterm neonates and infants.
- **For detailed guidance on dosing and treatment duration**, please see Interim Guidance on the Use of Antiviral Medications for the Treatment of Human Infection with Novel Influenza A Viruses Associated with Severe Human Disease and the EUI for oseltamivir.

RECOMMENDATIONS FOR INFLUENZA ANTIVIRAL CHEMOPROPHYLAXIS

- **Chemoprophylaxis**: Chemoprophylaxis with influenza antiviral medications is not routinely recommended but can be considered for persons exposed to animals infected with H5N1 influenza and is recommended for household contacts of confirmed human cases. Decisions to initiate post-exposure antiviral chemoprophylaxis should be based on clinical and public health considerations, including type of exposure, duration of exposure, time since exposure, infection status of the animals the person was exposed to, and whether the exposed person is at increased risk for complications with seasonal influenza.
- **If antiviral chemoprophylaxis is initiated, treatment dosing for the neuraminidase inhibitor oseltamivir (one dose twice daily) is recommended instead of the typical antiviral chemoprophylaxis regimen.** For specific treatment dosage recommendations by age group, please see Influenza Antiviral Medications: Summary for Clinicians. Physicians should consult the manufacturer's package insert for dosing, limitations of populations studied, contraindications, and adverse effects.
- **If exposure was time-limited and not ongoing**, five days of medication (one dose twice daily) from the last known exposure is recommended.

- **If the exposure is likely to be ongoing** (e.g., household setting), a duration of 10 days is recommended because of the potential for prolonged infectiousness from the H5N1 influenza case-patient.
- **Chemoprophylaxis of close contacts of a person with H5N1 influenza infection** is also recommended with oseltamivir twice daily (treatment dosing) instead of the once daily pre-exposure prophylaxis dosing.
- Chemoprophylaxis is recommended for **neonates and infants** less than one year of age who are exposed to H5N1 influenza. See EUI for oseltamivir.
- For detailed guidance, please see Interim Guidance on Follow-up of Close Contacts of Persons Infected with Novel Influenza A Viruses, Use of Antiviral Medications for Chemoprophylaxis.

MONITORING OF EXPOSED PEOPLE

Persons with exposure to infected animals: All persons in contact with H5N1 influenza infected animals, their raw products, or their contaminated environments should be monitored. Passive monitoring can be considered for workers in a healthcare facility who were wearing all appropriate PPE when exposed. Monitoring can be done in person, by phone, or via electronic means.

Active monitoring is recommended when exposure occurs in a farm setting as appropriate PPE use is difficult to verify.

Fever and symptom monitoring: Exposed people should be monitored for the following symptoms: fever/feeling feverish; chills; cough; sore throat; runny/stuffy nose; eye tearing, eye redness, irritation or discharge; sneezing; difficulty breathing; shortness of breath; fatigue; muscle/body aches; headache; nausea; vomiting; diarrhea; seizure; rash.

- **Active monitoring:** Exposed people are assessed for the signs and symptoms above at least once daily until 10 days after their last known exposure, or at a frequency or duration recommended by CDPH or the LHD. In a farm setting, monitoring should continue until the farm is released from quarantine. Monitoring can be performed in any of the following ways:
  - The LHD conducts daily health checks; or
  - The farm conducts daily health checks and notifies the LHD immediately about symptomatic workers or workers who call in sick and helps facilitate testing of ill workers.
- **USDA responders** should be actively monitored. It is acceptable to conduct monitoring on business days only for those who report wearing all appropriate PPE during their exposure.
- **Passive monitoring:** Each exposed person should be informed at the beginning of their monitoring period about the monitoring process, the symptoms and signs of concern, and when and how to contact the LHD if symptoms develop, including after hours and on weekends. LHDs may recommend more frequent contact with exposed workers.
- **Exposed people** should be informed at the beginning of the monitoring period what to expect during the monitoring process, signs and symptoms of concern, and when and how to contact the LHD if symptoms develop, including after hours and on weekends.
- **Close contacts** of persons with presumptive, probable, or confirmed H5N1 influenza infection should be monitored daily through 10 days after the last known exposure to the case (prior to the case's release from isolation).

Employers with workers who have exposures to H5N1 influenza, their raw products, their fecal material, or their environments, must provide **medical services** for employees per the California Division of Occupational Safety and Health (Cal/OSHA) Aerosol Transmissible Diseases Standard. These services include medical surveillance (health checks) as recommended by CDC, CDPH, or the local health officer. These and other requirements can be found in the Cal/OSHA Aerosol Transmissible Diseases-Zoonotic Standard**.** For more detailed CDPH monitoring information, email AvianInfluenza@cdph.ca.gov.

CASE FINDING

Case finding activities should commence if preliminary PHL testing indicates a human infection with H5N1 influenza virus.

At a minimum:

- Identify close contacts (e.g., household contacts) of presumptive, probable, or confirmed cases. See “Clinical and Exposure Information” section above.
- Conduct daily active monitoring of close contacts of cases for symptoms associated with H5N1 influenza infection for 10 days from their last known exposure to a presumptive, probable, or confirmed case (until 10 days following release from isolation).
- If a close contact develops symptoms or signs consistent with H5N1 influenza infection within 10 days of their last known exposure, promptly collect specimens for testing at a PHL.
- Please see the “Specimen Collection and Testing” section for additional information.
- Consider alerting local healthcare providers to ask patients presenting with febrile respiratory illness and/or conjunctivitis about the possibility of recent exposure to infected animals or humans.
- Advise providers to collect specimens from patients meeting the above criteria for influenza testing at a PHL.
- For additional information on testing, please see the testing section on pages 3 and 4, above.

ADDITIONAL INFORMATION ON AVIAN INFLUENZA A(H5N1)

- VRDL Test Page - Novel/Avian Influenza Virus (Human) PCR (ca.gov)
- Information on Avian Influenza (CDC)
- Avian Influenza A Virus: Information for Health Professionals and Laboratorians | Avian Influenza (Flu) (CDC)