

Avian Influenza

Surveillance and Investigation Protocol

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Office of Epidemiology and Prevention Services

Division of Infectious Disease Epidemiology

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I. ABOUT THE DISEASE

Avian influenza is an endemic disease of wild waterfowl that is caused by infection with avian influenza type A viruses. These viruses infect the respiratory and gastrointestinal tracts of birds and are shed in their saliva, mucous, and feces. Avian influenza has been found in more than 100 different species of wild birds but can also infect domestic poultry, such as chickens and turkeys, as well as other types of birds.¹ Sporadic spillover to mammals has also been documented, and on March 25, 2024, a multi-state outbreak of influenza A(H5N1) was detected in dairy cattle. Avian influenza type A viruses are classified as either low- or highly- pathogenic based on the severity of illness and degree of mortality they cause in chickens and do not refer to potential human illness. Avian viruses are distinct from the viruses responsible for causing seasonal epidemics in people and are not easily transmitted to or between humans.

In 1997, ancestors of H5N1 viruses first emerged in southern China, and while the poultry outbreaks were controlled, the virus was not eradicated in birds leading to sporadic human infections in 23 countries with a greater than 50% mortality rate in infected people. Contemporary HPAI A(H5N1) viruses are genetically different from their predecessors and since 2020, HPAI A(H5N1) clade 2.3.4.4b has circulated globally. This virus spreads efficiently among wild and domestic birds and has been found in wild birds across all 50 states and domestic poultry in 48 states. The primary driver for the spatial extent of influenza A(H5N1) spread since 2020 have been the movements of migratory birds, with seasonal timing and the geographic range of outbreaks following migration routes along major flyways. The wide geographic and panzootic spread of influenza A(H5N1) increases the likelihood that people will continue to be exposed to this virus and potentially for additional human infections.

Contemporary HPAI A(H5N1) viruses currently lack the ability to bind to receptors that predominate in the human upper respiratory tract and have caused only sporadic human infections. Human-to-human transmission has not been documented. In the United States, three human cases of A(H5N1) have been confirmed by the Centers for Disease Control and Prevention (CDC). Human infections with avian influenza viruses are most commonly associated with close, prolonged, unprotected contact with infected birds,² although the most recent human cases became infected after exposure to an infected dairy cow.

Influenza viruses are constantly changing and continued comprehensive surveillance of these viruses is critical to determine the public health risk and inform ongoing preparedness efforts. Genetic changes could result in an avian influenza virus that is capable of infecting people or is

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transmitted between people more readily. Rapid detection of human cases as well as prompt public health response are necessary to limit the potential impacts on human health.

A. Clinical Presentation

Human illnesses caused by avian influenza A viruses range in severity from asymptomatic infections to severe illness that requires hospitalization or in some instances death. Signs and symptoms may include:

- Fever or feeling feverish
- Eye redness (conjunctivitis)
- Cough
- Sore throat
- Runny or stuffy nose
- Muscle or body aches
- Headaches
- Fatigue
- Shortness of breath or difficulty breathing
- Nausea, vomiting, or diarrhea
- Seizures

B. Etiologic Agent

Influenza A viruses are characterized by the two proteins on the surface of the virus: hemagglutinin (H) and neuraminidase (N). There are 16 different “H” proteins (H1–H16), and nine “N” proteins (N1–N9) with each combination representing a separate subtype.

Genetic analysis of HPAI A(H5N1) clade 2.3.4.4b have revealed that when some mammals, including humans, are infected, the virus may undergo intra-host evolution resulting in genetic changes that allow more efficient replication in the lower respiratory tract or extrapulmonary tissues. Although these genetic changes may impact mammalian disease outcome, they have not been associated with enhanced transmissibility of the virus to humans. HPAI A(H5N1) viruses do not currently have the ability to easily infect and bind to α 2,6-linked sialic acid receptors that are predominant in the human upper respiratory tract.

C. Reservoir

Avian influenza is endemic in wild aquatic birds such as duck, geese, swans, gulls, and storks.³ It has also been detected in mammals such as foxes, skunks, and bears, in domestic animals such as, cats and dogs, in livestock such as goats and cattle, and in

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marine animals such as dolphins and seals.³ Avian influenza viruses do not usually infect humans but sporadic human infections can occur.

D. Incubation Period

The incubation period in humans ranges from 2 to 5 days but can be up to 10 days.

E. Mode of Transmission

Five subtypes of avian influenza A viruses can cause human infection: H5, H6, H7, H9, and H10 viruses.² Human infections are rare, but the risk of infection is present whenever avian influenza is circulating in domestic poultry or animal populations that are in close contact with people. People with close or prolonged unprotected exposures to infected birds or other animals, or to environments contaminated by infected birds or other animals (i.e., poultry or cattle farmers, veterinarians, emergency responders) are at greater risk of infection. Human infections can occur when enough virus gets into a person's eyes, nose, or mouth, or is inhaled.

In general, person-to-person transmission of avian influenza viruses is a rare event⁴ and there is no evidence of human-to-human transmission for contemporary influenza A(H5N1) clade 2.3.4.4b.

F. Period of Communicability

Humans infected with avian influenza are likely to be infectious one day prior to illness onset until symptom resolution.⁵

II. DISEASE CONTROL AND PREVENTION

1. Disease Prevention and Control Objectives

Reduce the risk of transmission of avian influenza A viruses to people through:

1. Public education on prevention measures including avoiding sources of exposure and best practices if unable to avoid contact with potentially infected animals.
2. Providing education to farmers, hobbyist and commercial poultry flock or livestock owners on hand hygiene and proper use of PPE when handling sick or deceased poultry/livestock.

Identify cases and reduce the risk of secondary transmission by:

1. Healthcare provider and laboratory education for recognition and reporting of avian (novel) influenza cases.

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2. Monitoring exposed individuals for the 10 days following their last exposure to avian influenza including those who have had a breach in PPE.
 - a. Animal health responders (i.e., APHIS and West Virginia Department of Agriculture [WVDA] employees)
 - b. Poultry/livestock owners
 - c. Farm personnel
 - d. Veterinarians
 - e. Public health responders
 - f. Any other person with exposure to an animal infected with avian influenza or the close contacts of confirmed cases.
3. Investigation of suspected or confirmed cases of avian (novel) influenza by:
 - a. Isolating symptomatic people with exposure to sources of avian influenza including confirmed human cases.
 - b. Testing respiratory specimens at the West Virginia Office of Laboratory Services (OLS) using the CDC's Real Time RT-PCR Influenza Diagnostic Assay.
 - c. Identifying and monitoring close contacts of confirmed cases.

2. Disease Prevention and Control

1. Whenever possible, people should avoid direct and unprotected contact with birds or other animals infected with or suspected to be infected with avian influenza A viruses.
2. Avoid unprotected contact with environments or products that may be contaminated with the virus from infected birds or livestock including litter, feces, poultry houses, contaminated surface water, unpasteurized milk, or unpasteurized dairy products.
3. Report any sick birds or livestock, or unusual bird or livestock deaths to the state or the federal government, either through their state veterinarian at the WVDA Animal Health Division at (304) 558-2214 or by calling the United States Department of Agriculture (USDA's) toll-free number at 1 (866) 536-7593.
4. Wear recommended personal protective equipment (PPE) when around birds or other animals suspected to be infected with avian influenza A viruses in addition to the PPE for work duties. Recommended PPE to protect against avian (novel) influenza A viruses includes:
 - a. Disposable or non-disposable fluid-resistant coveralls, and depending on task(s), add disposable or non-disposable waterproof aprons.
 - b. Any NIOSH Approved respirator (e.g., N95[®] or greater filtering facepiece respirator).

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- c. Properly fitted unvented or indirectly vented safety goggles or a face shield if there is risk of liquid splashing onto the respirator.
- d. Rubber boots or rubber boot covers with sealed seams that can be sanitized or disposable boot covers for tasks taking a short amount of time.
- e. Disposable or non-disposable head cover or hair cover.
- f. Disposable or non-disposable gloves.
5. Don and doff PPE in the correct order. Instructions for putting on and taking off PPE can be found at: www.cdc.gov/flu/avianflu/h5/worker-protection-ppe.htm.
6. After removing PPE:
 - a. At the end of the work shift, shower and change into clean uncontaminated clothing.
 - b. Do not bring contaminated clothing and equipment home unless laundry facilities are not available in the work area.
 - c. Launder contaminated clothing at work when possible. Use detergent then dry on the highest temperature suitable for the material.
 - d. If laundry facilities are unavailable at work, take clothing to be laundered at home in a plastic bag, wash separately from household items, and dry at the highest temperature suitable for the material.
 - e. Wear gloves and protective outerwear when handling soiled laundry.
 - f. Use separate storage containers for clean and soiled laundry.
7. During depopulation and while cleaning and disinfecting contaminated premises, avoid stirring up dust, bird or animal waste, and feathers to prevent the virus from dispersing into the air.⁶
8. The CDC recommends that everyone six months or older get a seasonal flu vaccine every year. It is important that anyone who may have exposure to avian influenza infected birds or livestock get a seasonal flu vaccine, ideally two weeks before their potential exposure.⁷ The seasonal flu vaccination will not prevent infection with avian influenza viruses but can reduce the risk of getting sick with human and avian influenza viruses at the same time.⁷
9. Do not consume unpasteurized (raw) milk or other dairy products made with unpasteurized milk.
10. Self-monitor for symptoms of illness while working with sick or potentially infected animals and for 10 days after the last exposure to infected or potentially infected animals or contaminated environments.

3. Prophylaxis and Treatment

1. Chemoprophylaxis of persons with exposure Avian Influenza A(H5N1) virus:

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- a. Chemoprophylaxis with influenza antiviral medications can be considered for any person meeting epidemiologic exposure criteria (Page 9). Decisions to initiate post-exposure antiviral chemoprophylaxis should be based on clinical judgment, with consideration given to the type of exposure, duration of exposure, time since exposure, and known infection status of the birds or animals the person was exposed to.
 - b. Chemoprophylaxis is recommended for close contacts of confirmed cases with oseltamivir twice daily (treatment dosing) instead of the once daily pre-exposure prophylaxis dosing.
 - i. A close contact is anyone who had unprotected (without use of respiratory and eye protection) exposure (within six feet) to a person who is confirmed, probable, or symptomatic suspected case of human infection with HPAI A(H5N1) virus (e.g., in a household or healthcare facility).
 - c. Antiviral chemoprophylaxis is not routinely recommended for personnel who used proper PPE and experienced no breaches.⁸
 - d. If antiviral chemoprophylaxis is initiated, oseltamivir treatment dosing (one dose twice daily) is recommended instead of the antiviral chemoprophylaxis regimen for seasonal influenza.
 - i. Specific dosage recommendations for treatment by age group is available at [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.
2. Antiviral Treatment
- a. People with signs or symptoms of acute respiratory illness who meet epidemiologic criteria (page 9) for avian influenza should be referred for prompt medical evaluation, testing, and empiric initiation of 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.
 - b. Hospitalized patients who are confirmed, probable, or suspected cases of human infection with HPAI A(H5N1) virus, regardless of time since illness onset are recommended to initiate antiviral treatment with oral or enterically

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administered oseltamivir as soon as possible. Antiviral treatment should not be delayed while waiting for laboratory testing results.

- c. Oseltamivir treatment is advised for outpatients with severe, progressive, or complicated illnesses. The following treatments may be utilized for outpatients with uncomplicated mild-to-moderate illness presenting within two days of illness onset: oral oseltamivir, inhaled zanamivir, IV peramivir, or oral baloxavir.⁹
- d. Recommended treatment duration for mild uncomplicated illness with a novel influenza A virus infection presenting within two days after illness onset is two doses per day of oral oseltamivir or inhaled zanamivir for five days, or a single dose of oral baloxavir, based on data for treatment of seasonal influenza.
 - i. For IV peramivir, the recommendation for treatment of uncomplicated illness is one dose of IV peramivir for one day based on treatment of seasonal influenza.
 - ii. Inhaled zanamivir is not recommended for treatment of persons with underlying airway disease (such as asthma or chronic obstructive pulmonary disease).⁹

III. DISEASE INVESTIGATION

A. Case Detection

In 2007, human infection with novel influenza A viruses became a nationally notifiable condition. A human novel influenza A virus infection is an infection with any influenza A virus that is different from the influenza viruses (i.e., A(H3N2) and A(H1N1)) that typically cause seasonal epidemics in people. This includes viruses from nonhuman origins and those that cannot be subtyped using the CDC's Influenza Real-Time RT-PCR Diagnostic Panel. Healthcare providers or veterinarians may be the first to be aware of zoonotic influenza cases. Some patients may present with signs and symptoms compatible with influenza virus infection and recent exposure to birds or livestock (i.e., chickens, turkey, ducks, guinea hens, cattle, goats). Still, some novel influenza virus infections are only identified when a clinical laboratory is unable to determine the subtype of an influenza A positive respiratory specimen. The Council for State and Territorial Epidemiologist's (CSTE) novel influenza case definition has not been updated since 2014. Given the ongoing global spread of HPAI A(H5N1) clade 2.3.4.4b since 2020 the CDC has developed case definitions for human infection with avian influenza viruses. The following definitions are for the purpose of investigations of confirmed cases, probable cases, and cases of avian influenza A virus infection under investigation.

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B. Case Definition

www.cdc.gov/flu/avianflu/case-definitions.html)

Clinical Criteria

Persons with signs and symptoms consistent with acute upper or lower respiratory tract infection, or complications of acute respiratory illness without an identified cause. Gastrointestinal symptoms such as diarrhea are often reported with HPAI A(H5N1) virus infection. Examples include but are not limited to:

- **Mild flu-like illness** (cough, sore throat, fever or feeling feverish, rhinorrhea, fatigue, myalgia, arthralgia, and headache) or **conjunctivitis** (red eye and discharge from eye).
- **Moderate to severe illness:** shortness of breath or difficulty breathing, altered mental status, and seizures.
- **Complications:** pneumonia, respiratory failure, acute respiratory distress syndrome, multi-organ failure (respiratory and kidney failure), sepsis, and meningoencephalitis.⁸

Epidemiologic Linkage

Persons with recent exposure (within 10 days) to avian influenza A viruses through one of the following:

- **Exposure to HPAI A(H5), A(H7), or A(H9) virus infected birds or other animals** defined as follows:
 - Close exposure (within six feet) to birds, with confirmed avian influenza A virus infection including, handling, slaughtering, defeathering, butchering, culling, or preparing birds for consumption; **OR**
 - Direct contact with surfaces contaminated with the feces of infected birds or animal, unpasteurized (raw) milk or other unpasteurized dairy products from infected herds of dairy cattle, or bird or animal parts (e.g., carcasses, internal organs) from infected birds or other animals; **OR**
 - Visiting a live bird market with confirmed bird infections or associated with a case of human infection with avian influenza A virus.
- **Exposure to an infected person** – Close (within six feet) unprotected (without use of respiratory and eye protection) exposure to a person who is a confirmed, probable, or symptomatic suspected case of human infection with an avian influenza A virus (e.g., in a household or healthcare facility).
- **Laboratory exposure** – Unprotected (without use of respiratory and eye protection) exposure to avian influenza A virus in a laboratory.

Public Health Response Classification Criteria

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Asymptomatic persons whom public health authorities, in consultation with CDC, determine that testing is needed to assess the clinical spectrum of infection with avian influenza A virus as part of public health investigations.

Laboratory Criteria

- Testing should be performed on people who meet Epidemiologic criteria **AND** Clinical **OR** Public Health Response criteria.
- Testing should be performed using the CDC's Human Real-Time RT-PCR influenza Diagnostic Panel (CDC Flu rRT-PCR Dx Panel) available at the WV OLS.

C. Case Classifications

Confirmed Case: Avian influenza A virus infection in a person that is confirmed by CDC's Influenza Division Laboratory or a CDC designated laboratory using methods mutually agreed upon by CDC and the CSTE.

Probable Case: A person meeting criteria for avian influenza A virus infection and for whom laboratory test results do not provide a sufficient level of detail to confirm HPAI A H5 virus infection.¹⁰

Suspected Case (also called Case Under Investigation): A person meeting criteria for avian influenza A virus infection and for whom confirmatory laboratory test results are unknown or pending.

D. Reporting Timeframe to Public Health

Novel influenza viruses including avian influenza A viruses in an animal or human, is a category I reportable disease. Suspected or confirmed cases of avian (novel) influenza in animals or humans should be reported **IMMEDIATELY** to the local health department (LHD). If the LHD cannot be reached, notify the Division of Infectious Disease Epidemiology (DIDE) epidemiologist on-call at (304) 558-5358, ext. 2 **IMMEDIATELY** of any suspected or confirmed avian (novel) influenza A viruses detected in West Virginia.

E. Outbreak Recognition

One human case of avian (novel) influenza A constitutes an outbreak.

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F. Healthcare Provider Responsibilities

1. Consider avian (novel) influenza A viruses in the differential diagnosis of acute respiratory illness in persons with recent contact (<10 days prior to illness onset) with sick or dead birds or animals in any of these categories:
 - a. Domestic poultry (e.g., chickens, turkeys).
 - b. Wild aquatic birds (e.g., ducks, geese, swans).
 - c. Other wild or domesticated birds.
 - d. Wild or domesticated animals.
 - e. Farm animals (e.g., cattle).
2. Consider avian (novel) influenza in the differential diagnosis of persons with acute respiratory illness who had contact with potentially infected birds or animals through:
 - a. Depopulation activities from a confirmed avian influenza outbreak in domestic poultry (e.g., handling or depopulating).
 - b. Direct contact with the virus contaminated environments of birds infected with avian influenza virus (e.g., bird houses, litter, feces).
 - c. Contact with materials contaminated by birds or other animals infected with avian influenza.
 - d. Any contact with unpasteurized milk or dairy products from infected cattle.
 - e. Contact with environments contaminated with unpasteurized milk or dairy products from infected cattle.
 - f. Exposure to found sick or deceased wild birds.
3. If avian (novel) influenza A virus infection is suspected, report **IMMEDIATELY** to the LHD. If the LHD cannot be reached contact the DIDE epidemiologist on-call at (304) 558-5358, ext. 2. An epidemiologist is available 24/7/365 to assist.
4. Assist public health authorities during the investigation by collecting and sharing:
 - a. Clinical information including symptoms, flu vaccination history, medical history, and acute conditions;
 - b. Risk factor and exposure history; and
 - c. Close contact information.
5. Use standard, contact, and airborne precautions when providing medical care for patients suspected of avian influenza infection.
 - a. Recommendations for infection control and prevention may be found at: www.cdc.gov/flu/avianflu/novel-flu-infection-control.htm
6. Consult with DIDE at (304) 558-5358, ext 2. to determine if testing is necessary. Testing for avian influenza is free at the Office of Laboratory Services (OLS). Prior approval from a DIDE epidemiologist is required.

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7. If influenza testing at OLS is recommended, collect specimens for influenza testing as soon as possible after illness onset, ideally within seven days.
 - a. **SPECIMEN COLLECTION AND STORAGE:**
 - i. Collect a nasopharyngeal swab **AND** a nasal swab combined with an oropharyngeal swab (e.g., two swabs combined into one viral transport media vial).
 - a. The nasopharyngeal swab and the combined nasal-throat swabs should be tested separately.
 - b. If unable to collect a nasopharyngeal and a nasal swab, a single nasal or oropharyngeal swab is acceptable.
 - ii. For patients with **conjunctivitis (with or without respiratory symptoms)**, collect a conjunctival swab **AND** a nasopharyngeal swab in viral transport media.
 - iii. Patients with severe respiratory disease also should have lower respiratory tract specimens (e.g., an endotracheal aspirate or bronchoalveolar lavage fluid) collected.
 - iv. For severely ill persons, multiple respiratory tract specimens from different sites should be obtained to increase the potential for influenza A(H5N1) virus detection.
 - v. Use swabs with a synthetic tip (polyester or Dacron®) and an aluminum or plastic shaft to collect specimens. The swab specimen collection vials should contain 1-3 ml of sterile viral transport medium.
 - vi. Clinical specimens should be stored at $\leq -20^{\circ}\text{C}$ for no more than seven days or at $\leq -70^{\circ}\text{C}$ and transported to OLS promptly on dry ice. Avoid freezing and thawing specimens.
8. Consider diagnostic testing for other respiratory pathogens that can cause acute respiratory illness based on local epidemiology of circulating respiratory viruses.
9. Follow recommendations for influenza antiviral treatment and chemoprophylaxis of exposed persons found at:
www.cdc.gov/flu/avianflu/hpai/hpai-interim-recommendations.html#recommendations-ipc.
 - a. Antiviral treatment is recommended as soon as possible for symptomatic outpatients and hospitalized patients who are suspected, probable, or confirmed cases of human infection with avian (novel) influenza A viruses.
 - b. Chemoprophylaxis with influenza antiviral medications can be considered for any person meeting epidemiologic exposure criteria and should be based on clinical judgment. If antiviral chemoprophylaxis is initiated, oseltamivir

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treatment dosing (one dose twice daily) is recommended instead of the antiviral chemoprophylaxis regimen for seasonal influenza.

- c. Post-exposure prophylaxis of close contacts of confirmed cases is recommended with oseltamivir twice daily (treatment dosing) instead of the once daily pre-exposure prophylaxis dosing.
10. Educate the patient on isolation recommendations until testing determines whether they are infected with an avian (novel) influenza virus.
11. Notify the patient that infection with avian influenza is a reportable condition in West Virginia and the LHD will contact the patient to complete a public health investigation.

G. Laboratory Responsibilities

1. Refer requests for avian influenza virus testing for human specimens to the DIDE epidemiologist on-call at (304) 558-5358, ext. 2.
2. Send the entire specimen to OLS for avian (novel) influenza A virus testing. This ensures adequate specimen is available to send to CDC if needed.
3. Send all influenza A positive **unsubtypable** specimens to OLS for further testing and notify the DIDE epidemiologist on-call at (304) 558-5358, ext. 2.
4. Refer to the OLS website for specimen submission forms (General Microbiology Specimen Test Request Submission Form) and shipping instructions.
5. Ship specimen(s) to OLS, 167 11th Avenue, South Charleston, WV 25303 (Attention: Microbiology Section).
6. Email the FedEx tracking number and any questions to P. Patrick Dotson II, Ph.D at: Patrick.P.Dotson@wv.gov.

H. Local Health Responsibilities

1. Educate healthcare providers and laboratories about the responsibilities mentioned above (see Sections F and G).
2. Maintain readiness to respond to avian influenza events by:
 - a. Keeping at least five unexpired respiratory collection kits on hand at the LHD. Reordering respiratory collection kits from OLS as kits expire or are used.
 - b. Have an emergency number that can be used to contact LHD staff after-hours and over the weekend.
 - c. Ensure PPE personal protective equipment (masks, gloves, gowns, goggles, head or hair cover, boots) will be available for responding LHD staff.

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- d. Have personnel fit tested. At a minimum respiratory protection should be at least as protective as a fit-testing NIOSH-certified disposable N95 filtering facepiece respirator.
 - e. Recommend and offer the seasonal influenza vaccine each year. While the seasonal influenza vaccine does not protect against avian influenza viruses, it will reduce the risk of co-infection with seasonal human and avian influenza A viruses.
 - f. Ensure staff are trained on Novel Influenza Case Investigation and Contact Tracing.
3. Maintain communication with state and local WVDA veterinarians and state epidemiologists to ensure a collaborative approach to Avian Influenza response activities.
4. If notified of human exposures to avian influenza, ensure the following has been done:
 - a. Provide education to exposed individuals about the signs and symptoms of avian influenza in humans including emergency warning signs and when to seek medical attention, how to use the Self-Monitoring Log to monitor for illness, and when to contact the LHD.
 - b. Monitor exposed individuals for the 10 days following the last date of exposure, making contact on the day of LHD notification then again on day five and 10. The Text Illness Monitoring System (TIMS) may be used to monitor groups of people during large responses. LHDs may enroll to use the CDC's Text Illness Monitoring System (TIMS) by completing the TIM interest form at: www.cdc.gov/text-illness-monitoring/contact/index.html.
 - c. Provide weekly updates on the status of exposed individuals to the HPAI Epidemiologist and the Influenza Surveillance Coordinator until monitoring is complete.
 - d. Notify the exposed individual once monitoring is complete.
 - e. Notify the DIDE epidemiologist on-call immediately if a person being monitored develops symptoms during their monitoring period so that testing may be coordinated with OLS/CDC.
 - f. Instruct symptomatic people with exposure to isolate until testing determines whether they have been infected with avian influenza.
5. If a suspect case of avian influenza is reported ensure the following is completed:
 - a. Report any suspected or confirmed avian (novel) influenza in an animal or person to the epidemiologist on-call at (304) 558-5358, ext. 2.

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- b. Use standard investigative tools, such as the CDC's Novel Influenza Case Report Form to complete the investigation.
 - c. Educate the case under investigation (CUI) to isolate. Instruct the CUI to notify the healthcare facility before arrival of their exposure to avian influenza when seeking medical care.
 - d. Obtain respiratory specimens from suspected cases and ship the specimens to OLS. See Section H. Healthcare provider and Section G. Laboratory Responsibilities for details on appropriate specimen types.
 - e. Ensure healthcare facilities use standard, contact, and airborne precautions when providing medical care for suspected avian influenza cases.
 - f. Provide healthcare facilities with the CDC antiviral treatment and chemoprophylaxis recommendations found here:
www.cdc.gov/flu/avianflu/hpai/hpai-interim-recommendations.html#recommendations-treatment
 - g. Identify close contacts of confirmed cases and complete the following:
 - i. Initiate post-exposure prophylaxis with oseltamivir twice daily (treatment dosing) for contacts with unprotected, prolonged close contact (within six feet) to the case.
 - ii. Follow guidance above for human exposures to avian influenza.
6. Educate hobbyist/backyard flock owners about recommended biosecurity measures. Additional biosecurity information is available from the USDA's Defend the Flock Program at:
www.aphis.usda.gov/livestock-poultry-disease/avian/defend-the-flock.
 7. Educate dairy cattle owners about recommended biosecurity measures for cattle. Additional biosecurity information is available from the USDA at:
www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/livestock.
- I. State Health Responsibilities**
1. Maintain capacity to supplement LHD response for avian influenza events, including outbreak investigations.
 2. Maintain communication with the WVDA State Veterinarian and facilitate a collaborative approach to Avian Influenza response activities.
 3. Provide technical expertise and consultation for surveillance, investigations, laboratory testing, contact tracing, and prevention and control of avian influenza.
 4. Report suspected or confirmed cases of avian influenza to the CDC within 24 hours of notification. CDC notifications can be made:

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- a. During business hours by calling the Influenza Division directly at: (404) 639-3747.
 - b. After business hours by calling the CDC Epidemiologist on-call at: (770) 488-7100. You may be asked to contact the CDC influenza Division via email at FluViewSupport@cdc.gov if no one is there to address your call from the Influenza team.
5. Report suspected or confirmed cases of avian influenza to the West Virginia Bureau for Public Health Leadership by phone.
 6. Provide complete case investigation data on avian influenza cases to the CDC through the Secure Access Management Services (SAMs) Novel Influenza Portal.
 7. Monitor CDC Epi-X for notifications of avian influenza exposures and alert Regional Epidemiologists in the exposed person's county of residence to begin monitoring.
 8. Arrange surveillance of all persons being monitored for avian influenza in collaboration with Regional Epidemiologists and LHDs.
 9. Maintain situational awareness of avian influenza surveillance, prevention, and control activities in collaboration with the WVDA, the Centers for Threat Preparedness, OLS, CDC, USDA, and other public health partners.

J. Occupational Health

People who work with or are exposed to animals (i.e., poultry or livestock) should take steps to reduce the risk of infection with avian influenza A viruses associated with severe disease when working with animals or potentially contaminated materials. Recommendations for Worker Protection and Use of PPE to Reduce Exposure to Novel Influenza A Viruses may be found at:

www.cdc.gov/flu/avianflu/h5/worker-protection-ppe.htm. Additionally, the CDC recommends that everyone six months or older get a seasonal flu vaccine every year. It is especially important that people who may have exposure to sick birds get a seasonal flu vaccine, ideally two weeks before their potential exposure, if possible.⁷ The seasonal flu vaccination will not prevent infection with avian influenza viruses but can reduce the risk of getting sick with human and avian influenza viruses at the same time.⁷

IV. DISEASE SURVEILLANCE

A. Public Health Significance

Avian influenza A is a group of zoonotic viruses with many possible subtypes, although A(H7) and A(H5) are of greatest public health significance. Human infection with avian influenza A viruses may cause high morbidity and mortality, as people have little to no

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immunity against these viruses. At least six HA subtypes of Avian influenza viruses, specifically H3 (H3N8), H5 (HPAI H5N1, H5N6, and H5N8), H6, H7, H9 (LPAI H9N2), and H10, have been reported to cause infections in humans, resulting in a total of 2,754 infections and 1,120 fatalities worldwide since 1977.¹¹ Specifically, ancestral influenza A(H5N1) emerged in 1997 and has since resulted in over 900 human cases across 23 countries; these cases had a >50% mortality.

Since 2020, influenza A(H5N1) clade 2.3.4.4b virus has been the predominant avian influenza virus circulating globally. This virus is genetically different from its predecessors and is behaving in new and unexpected ways. Specifically, there have been over 200 spillover infections in mammals and on March 25, 2024, an outbreak of influenza A(H5N1) was reported in a dairy farm in Texas. This is the first-time dairy cattle have been infected with an avian influenza virus.

Human infections are rare and there has been no documented human-to-human transmission associated with this contemporary A(H5N1) virus. As of April 2024, 26 human cases of influenza A(H5N1) clade 2.3.4.4b have been reported around the world including two cases from the United States. In April 2022, a case was reported in a commercial poultry outbreak responder and in April 2024, a dairy farm employee was infected after being exposed to infected cattle. This represents the first-time influenza has been transmitted to humans from a dairy cow.

Avian influenza epidemics have led to significant losses in various animal populations, (i.e., domestic poultry) and surveillance across ten countries and three continents since 2022 draws particular attention to the escalated rates of infection among mammals. The increase in mammal spillover infections raises concerns about the virus's risk to humans. Influenza viruses are constantly changing, and continued surveillance and preparedness efforts are essential to assess the risk posed by these viruses including whether genetic changes may lead to an increased ability to spread to humans, cause severe illness, or result in reduced susceptibility to antivirals.

B. Disease Surveillance Objectives

1. To maintain situational awareness of avian influenza A virus trends globally, in the United States, and West Virginia.
2. To detect and respond to avian influenza events in West Virginia.
3. To identify and characterize the epidemiologic features of avian influenza viruses circulating in West Virginia.

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C. Surveillance Indicators

1. Proportion of exposed people that completed their monitoring period.
2. Proportion of cases reported to the health department in a timely manner.
3. Proportion of cases with complete sociodemographic, exposure, clinical, medical history, vaccination, and laboratory information.

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V. REFERENCES

1. Avian Influenza in Birds. Centers for Disease Control and Prevention. June 14, 2022. Accessed March 11, 2024. www.cdc.gov/flu/avianflu/avian-in-birds.htm.
2. Bird Flu Virus Infections in Humans. Centers for Disease Control and Prevention. May 4, 2022. Accessed March 15, 2024. www.cdc.gov/flu/avianflu/avian-in-humans.htm.
3. Bird Flu in Pets and Other Animals. Centers for Disease Control and Prevention. January 12, 2024. Accessed March 15, 2024. www.cdc.gov/flu/avianflu/avian-in-other-animals.htm.
4. Reported Human Infections with Avian Influenza A Viruses. Centers for Disease Control and Prevention. February 1, 2024. Accessed March 15, 2024. www.cdc.gov/flu/avianflu/reported-human-infections.htm.
5. Interim Guidance on Influenza Antiviral Chemoprophylaxis of Persons Exposed to Birds with Avian Influenza A viruses Associated with Severe Human Disease or with the Potential to Cause Severe Human Disease. Centers for Disease Control and Prevention. March 24, 2022. Accessed March 18, 2024. www.cdc.gov/flu/avianflu/guidance-exposed-persons.htm.
6. Backyard Flock Owners: Take Steps to Protect Yourself from Avian Influenza (Bird Flu). Centers for Disease Control and Prevention. October 31, 2022. Accessed March 26, 2024. www.cdc.gov/flu/avianflu/h5/backyardflockowners.htm#ppe.
7. Prevention and Antiviral Treatment of Bird Flu Viruses in People. Centers for Disease Control and Prevention. October 31, 2022. Accessed March 13, 2024. www.cdc.gov/flu/avianflu/prevention.htm.
8. Highly pathogenic avian influenza A(H5N1) virus in animals: Interim recommendations for prevention, Monitoring, and Public Health Investigations. Centers for Disease Control and Prevention. March 29, 2024. Accessed April 5, 2024. www.cdc.gov/flu/avianflu/hpai/hpai-interim-recommendations.html.
9. Interim guidance on the use of antiviral medications for treatment of human infections with novel influenza A viruses associated with severe human disease. Centers for Disease Control and Prevention. March 23, 2022. Accessed April 8, 2024. www.cdc.gov/flu/avianflu/novel-av-treatment-guidance.htm.

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10. Case definitions for investigations of human infection with avian influenza A viruses in the United States. Centers for Disease Control and Prevention. March 23, 2022. Accessed April 5, 2024. www.cdc.gov/flu/avianflu/case-definitions.html.
11. Duan C, Li C, Ren R, Bai W, Zhou L. An overview of avian influenza surveillance strategies and modes. Science in One Health. 2023;2:100043. doi:10.1016/j.soh.2023.100043.

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