

## Avian Influenza (H5N1) Bulletin

### Key Messages

- This bulletin update highlights several features of highly pathogenic avian influenza (HPAI) due to H5N1 clade 2.3.4.4b, some unprecedented and warranting increased vigilance. These include:
  - The expansive geographic range across Europe, South and North America, including Canada
  - The involvement of a wide variety of animals, including birds and mammalian species
  - Sporadic human cases including a spectrum of illness ranging from mild or asymptomatic to severe
  - Potential for resurgence with seasonal bird migration
- Influenza viruses are highly changeable and the main concern associated with any novel influenza virus is possible adaptation to cause infection in humans. For that reason, all reasonable efforts are required to avoid exposure to potentially infected (e.g. sick or dying) birds and animals.
- To reduce the risk of exposure from wild birds and other wildlife, members of the public should avoid touching sick or dead birds and report dead birds to the [BC Wild Bird Mortality Line](#) (1-866-431-2473). For sick/dead mammals, contact the [BC Wildlife Health Program](#) at 250-751-7246
- Clinicians should be aware of the potential risk to human health among those with greater exposure opportunity such as those who work in poultry farms, as well as individuals exposed to sick or dead wild birds or mammals. Given a spectrum of illness severity, ask about relevant exposures to sick or dead birds/animals (especially ten days prior to symptom onset) for which another cause has not been identified and order specific testing for H5N1 among those who present with flu-like illness.
- For testing of any suspect avian influenza (AI) in humans, clinicians should consult the Public Health Laboratory (PHL) Medical Microbiologist in advance (604-661-7033; 24/7). Specimens should be collected as close to possible to illness onset. Inform the local public health authority of human cases under investigation. Complete the [Virology Requisition](#) and clearly flag “Suspect Human AI” on the form. For other testing details, refer to the [BCCDC elab handbook](#) and search under “avian influenza”
- People who develop flu-like illness after contact with sick or dead animals or birds should tell their healthcare provider about this exposure upfront so precautions can be taken.

---

---

### Epidemiological Updates – British Columbia and Canada

#### **Infected Premises**

Since April 2022, there have been 103 detections of HPAI in poultry farms and small flocks in British Columbia, leading to the death or culling of an estimated 3.7M birds. The circulating clade of concern

is influenza H5N1 clade 2.3.4.4b. Of the roughly 7.2M impacted domestic birds across Canada, half were in British Columbia. The vast majority of infected premises occurred in November and December 2022, and the number of newly infected premises has slowed in 2023 due to the migration of birds to the Southern Hemisphere. As of March 15, 2023, there are currently 58 premises under active animal health control measures, which includes the destruction and disposal of infected flocks and cleaning and disinfection of premises. While every health authority in BC has had infected poultry premises, more than three quarters of the infected premises have been in the Fraser Health region. Further information on infected premises is available on the [Canadian Food Inspection Agency's](#) website.

### **Wildlife**

As of March 15, 2023, there have been 1,794 suspect and confirmed positive samples in wildlife across Canada detected through passive surveillance (e.g., testing of birds and animals found dead). Of these positive samples, 215 (12%) were in British Columbia. Up to date wildlife detections in Canada are available on the [HPAI Wildlife Dashboard](#).

There have been 12 positive wild mammals detected in BC: 2 foxes and 10 skunks. Eight skunks were found dead in residential areas of both Richmond and Vancouver, with the remainder of positive animals found dead in central parts of the province.

## Global Epidemiological Summary

### **H5N1 Influenza in Animals**

From 2020-2023 there has been global spread of HPAI following the seasonal migratory patterns of wild birds. HPAI spread to North America from Europe and Asia from January to October 2022, and later to South America from November 2022 to February 2023.

In addition to bird-to-bird transmission of HPAI, circumstantial evidence suggests possible mammal-to-mammal transmission during an outbreak of avian influenza (H5N1) clade 2.3.4.4b among farmed minks in Spain in October 2022 and mass die-off of sea lions with clade 2.3.4.4b between January and February 2023 in Peru.

### **HPAI in Humans**

As of March 3, 2023, there have been 873 human cases of influenza A (H5N1) due to various clades reported to the World Health Organization since 2003. More than half (457 cases) resulted in death [per case fatality ratio = 53%]. However, it is likely that some cases have gone undetected and the true severe outcome risk may differ from that among reported cases.

Between 2022-2023, ten human infections with influenza A (H5N1) have been reported worldwide: one in the United Kingdom (reported January 2022), one in the United States (reported April 2022), two in Spain (reported October 2022), one in Vietnam (reported October 2022), two in China (reported November 2022 and March 2023), one in Ecuador (reported January 2023), and two in Cambodia

(reported February 2023). Age ranges of human infections have spanned from nine to 80+ years old with reported signs and symptoms ranging from no symptoms or mild illness (e.g., conjunctivitis) to severe (pneumonia involving hospitalization and death). Of these recent cases, two died. Eight of these ten cases were influenza A (H5N1) clade 2.3.4.4b. The two cases from Cambodia were instead influenza A (H5N1) clade 2.3.2.1c which is endemic in Cambodia. All ten cases followed close contact with infected birds. Of note, human infections who were asymptomatic or had mild symptoms were primarily among male workers involved in culling activities who were wearing personal protective equipment (PPE). Cases with severe or fatal outcomes were all women exposed to sick or dead backyard poultry without PPE, which indicates the risk associated with unprotected exposure to infected birds<sup>1</sup>.

### Management and Treatment

#### **For The Public**

Avoid touching wild and domestic birds, as well as other surfaces that may be contaminated with avian influenza (AI) virus. If you spot a sick or dead wild bird or other wild animal, do not attempt to move them.

Sick birds and animals can present with a range of respiratory, neurologic, and systemic symptoms. [Signs of a sick bird](#) may include lack of energy or movement; nervousness, tremors, or lack of coordination; swelling around the head, neck, and eyes; coughing, gasping for air, or sneezing; diarrhea, or sudden death. In animals, neurologic symptoms may be more prominent, and include excess salivation, inability to walk, circling, seizures, and tremors).

Pet owners should monitor their pets closely to ensure they don't come into contact with sick or dead birds and animals. Pets that develop signs of illness after exposure to sick or dead animals, should consult with their veterinarian. For more information on precautions for pets see the CFIA's guidance on [Pets and avian influenza](#).

For more information on preventing and detecting disease in small flocks and pet birds, please refer to the [CFIA guidelines](#). If you encounter a bird that is injured or suspected orphaned, call your local accredited [rescue and rehabilitation centre](#). If you encounter a sick or dead bird, report it to the [BC Wild Bird Mortality](#) line (1-866-431-2473). For dead mammals, contact the BC Wildlife Health Program at 250-751-7246. More information on reporting is available on the [BC Wildlife Health](#) website.

#### **For Commercial and Domestic Flock Owners**

The Canadian Food Inspection Agency (CFIA) is the lead agency for the animal health response for domestic flocks infected with HPAI. The CFIA responds to AI outbreaks by establishing quarantines,

---

<sup>1</sup> For more information, consult the detailed risk assessment available at: EFSA (European Food Safety Authority), ECDC (European Centre for Disease Prevention and Control), EURL (European Reference Laboratory for Avian Influenza), Adlhoc C, Fusaro A, Gonzales JL, Kuiken T, Marangon S, Stahl K, Niqueux É, Staubach C, Terregino C, Mirinaviciute G, Aznar I, Broglia A and Baldinelli F, 2023. Scientific report: Avian influenza overview December 2022 – March 2023. EFSA Journal 2023;21(3):7917, 43 pp. <https://doi.org/10.2903/j.efsa.2023.7917>

ordering the humane destruction of all infected and exposed poultry, conducting tracing activities, overseeing the cleaning and disinfection of premises, and verifying that affected farms remain free of AI according to international standards. Bird owners are legally responsible for notifying authorities of serious bird diseases, such as AI, and should monitor their birds for symptoms<sup>2</sup>. [Safe handling guidelines](#) are available from the Public Health Agency of Canada. For symptomatic birds, call a veterinarian, the nearest [CFIA Animal Health Office](#), or the BC Animal Health Centre (1-800-661-9903).

Poultry farm operators should look for signs of AI in their flocks, such as a sudden, unexplained increase in mortality. When AI is confirmed at a premise, local public health follows up with potentially exposed workers and conducts a risk assessment. They may provide recommendations on antiviral treatment, symptom monitoring, and testing based on exposure and symptoms.

### **For Farm Workers**

The BC Ministry of Agriculture works in close collaboration with the CFIA to respond to HPAI detections. The updated seasonal influenza vaccine is recommended in advance of the typical respiratory virus season for people working with live poultry<sup>3</sup>. Farm personnel not directly involved in culling activities should avoid exposure to infected birds, manure, or surfaces that may be contaminated with AI virus<sup>4</sup>. Farm personnel participating in outbreak control efforts, including culling activities or environmental clean up, must follow [PPE recommendations](#) that include wearing impervious disposable gowns or coveralls, eye protection, fit-tested and seal-checked respirators, and nitrile gloves. After removing PPE, perform good hand hygiene such as handwashing with soap and water or using alcohol-based hand rub if soap and water are not immediately available. Never wear contaminated clothing or equipment outside of designated work areas and leave all contaminated clothing and equipment at work.

### **For Health Professionals**

Human infections of influenza A (H5N1) are reportable to your local medical health officer. Clinical illness due to influenza A (H5N1) is a potential risk amongst individuals with history of direct contact with infected birds (dead or alive) or contaminated environments.

The usual incubation period for avian influenza A (H5N1) in humans is 1 to 5 days and up to 9 days after exposure. Avian influenza A (H5N1) in humans mainly affects the respiratory tract, but can manifest with gastrointestinal or central nervous system symptoms.

---

<sup>2</sup> Infected birds may show one or many of these signs: lack of energy, movement or appetite; decreased egg production; swelling around the head, neck, and eyes; coughing, gasping for air or sneezing; nervous signs, tremors, or lack of coordination; diarrhea; sudden death.

<sup>3</sup> For more information on how to get vaccinated against seasonal influenza, visit [www.getvaccinated.gov.bc.ca/](http://www.getvaccinated.gov.bc.ca/)

<sup>4</sup> Exposures include, but are not limited to: being in the same close airspace, touching or handling infected animals; consuming under- or uncooked poultry or egg products from an affected farm; direct contact with contaminated surfaces; being exposed to manure or litter containing high concentration of virus or being in a contaminated air space or environment; visiting a live poultry market with confirmed bird infections or associated with a case of human infection.

Health professionals should implement respiratory precautions immediately, and cases should be managed in respiratory isolation with contact and droplet precautions. Airborne precautions are warranted in the event of aerosol-generating procedures or conditions. Given a spectrum of illness inclusive of milder or atypical presentations, clinicians are encouraged to use their judgement and/or consult Infection Control for guidance around enhanced measures where the index of suspicion (e.g. based on contact, comorbidity or clustering history) and exposure risk may be higher. Facilities should be mindful of the protection of other patients and visitors, in addition to healthcare workers, to minimize nosocomial transmission and risk. The [BC Provincial Infection Control Network \(PICNet\) Guidelines](#) provide further information on infection control recommendations for assessment and testing, particularly if admission to hospital is required.

**Testing:** For testing of any suspect AI in humans, clinicians should consult the Public Health Laboratory (PHL) Medical Microbiologist in advance (604-661-7033; 24/7). Separate oropharyngeal and nasopharyngeal specimens may improve detection and should be collected as soon as possible to illness onset. Inform the local public health authority of human cases under investigation. Complete the [Virology Requisition](#) and clearly flag “Suspect Human AI” on the form. For other testing details, refer to the [BCCDC elab handbook](#) and search under “avian influenza”

**Treatment and prophylaxis:** The antiviral drugs oseltamivir or zanamivir can reduce the duration and severity of illness if given within 48 hours of illness onset, preferably as soon as possible. Treatment requires a five-day course, but longer duration (up to 10 days) should be considered for severely ill cases.

Post-exposure antiviral chemoprophylaxis with influenza antiviral medications can be started up to 7 days after the last exposure to the AI virus. The decision to initiate chemoprophylaxis should be based on clinical judgement, with consideration given to the use of PPE and whether any breaches occurred, the type and duration of exposure, the time since exposure, whether the exposed person is at [higher risk for complications from influenza<sup>5</sup>](#), and known infection status of the birds/animal to which the person was exposed. If chemoprophylaxis is initiated, treatment dosing for the neuraminidase inhibitors oseltamivir or zanamivir (one dose twice daily) is recommended instead of the typical

---

<sup>5</sup> People at high risk of influenza-related complications or hospitalization include all children 6–59 months of age, Adults and children with the following chronic health conditions <sup>List:</sup> cardiac or pulmonary disorders (includes bronchopulmonary dysplasia, cystic fibrosis, and asthma); diabetes mellitus and other metabolic diseases; cancer, immune compromising conditions (due to underlying disease, therapy, or both, such as solid organ transplant or hematopoietic stem cell transplant recipients); renal disease; anemia or hemoglobinopathy; neurologic or neurodevelopment conditions (includes neuromuscular, neurovascular, neurodegenerative, neurodevelopmental conditions, and seizure disorders [and, for children, includes febrile seizures and isolated developmental delay], but excludes migraines and psychiatric conditions without neurological conditions); morbid obesity (BMI of 40 and over); and children 6 months to 18 years of age undergoing treatment for long periods with acetylsalicylic acid, because of the potential increase of Reye’s syndrome associated with influenza. All pregnant women; People of any age who are residents of nursing homes and other chronic care facilities; Adults 65 years of age and older; and Indigenous peoples.

antiviral chemoprophylaxis regimen (once daily)<sup>6</sup>. Prophylaxis should be provided for seven days for time-limited exposures and up to 10 days for ongoing exposure.

Please refer to the [Interim Public Health Guidelines for H5N1 Avian Influenza Outbreak](#) for more information regarding clinical guidelines for AI.

---

<sup>6</sup> This recommendation for twice daily antiviral chemoprophylaxis dosing frequency is based on limited data that support higher chemoprophylaxis dosing in animals for avian A(H5N1) virus (Boltz DA, et al JID 2008;197:1315) and the desire to reduce the potential for development of resistance while receiving once daily dosing (Baz M, et al NEJM 2009;361:2296; Cane A et al PIDJ 2010;29:384; MMWR 2009;58:969).