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1.0 SITUATION

The purpose of this document is to provide public health officials with guidance on the management of human exposures to avian influenza in birds or animals or suspected human cases of avian influenza, notably highly pathogenic avian influenza (HPAI) clade 2.3.4.4b H5N1 or H5N2 reassortment viruses.

The guidance is based on the Human Health Issues related to Avian Influenza in Canada[1] and updated to reflect guidance on the current circulating strains. This guidance will be modified and updated as the situation or the virus evolves.

2.0 BACKGROUND

Avian influenza refers to an infectious disease of birds caused by type A strains of influenza virus. The virus is primarily transmissible between birds and is not yet well adapted to humans. However, rare human infections have occurred, especially among those with close or prolonged contact with infected animals, sometimes resulting in severe illness. There have been ongoing sporadic spillover events to a wide range of non-human mammalian species.

Avian influenza A viruses are designated as highly pathogenic avian influenza (HPAI), or low pathogenic avian influenza (LPAI) based on molecular characteristics of the virus and the ability of the virus to cause disease and mortality in birds. However, the severity of the illness in birds (i.e., whether the avian influenza virus is considered LPAI or HPAI) does not predict severity in humans. Both HPAI and LPAI strains have the potential to cause mild or serious illness in humans.[2]

Since 1997, HPAI H5N1 viruses have caused nearly 1000 human infections in two dozen countries, among whom cumulatively half have died through December 2024.[3] Since 2020, HPAI H5N1 clade 2.3.4.4b viruses have shown unprecedented diversification and expansion of their geographic and host range, having now been identified among wild or domestic birds on every continent except Australasia. Spread has included further reassortment with local avian influenza viruses, and spillover to an unprecedented range of animal hosts, such as cats, dairy cattle, house mice, raccoons, minks, foxes, skunks, and marine mammals. Associated human infections have ensued following exposure to infected animals or their environment, including >75 cases identified in Europe, North and South America between 2021 and 2024, mostly (>85%) within the United States (US). Over 1000 dairy herds across >15 states are among the mammals affected by clade 2.3.4.4b H5N1 viruses to date[4], including mild infections among exposed dairy workers who comprise about 60% of the US cases to date through 2024.

There is evidence of mammal-to-mammal transmission in the current epizootic of dairy cattle in the United States (US)[5] and some evidence in previous significant mortality events of sea lions in South America[6] and farmed minks in Spain.[7] Onward transmission from cattle back into poultry, wild birds, and mammals has also been noted in the recent (2024) US epizootic.[5] To date, H5N1 has not been detected in cattle in Canada.

The Canadian Food Inspection Agency (CFIA) and the BC Ministry of Agriculture and Food continues to monitor the situation closely. The CFIA requires testing:

1. lactating dairy cattle imported from the United States; and
2. all dairy cattle returning to Canada from exhibitions or shows from the United States.

CFIA also conducts milk testing at Canadian processors.[8]

In the current epizootic in British Columbia (BC), detections in poultry have occurred primarily in the fall, and, to a lesser extent, in the spring which aligns with wild bird dynamics and migration periods. In 2024, BC reported Canada's first domestically acquired human case of avian influenza H5N1, a teenager with severe illness requiring hospitalization and intensive care.[9] Of note, two of the 66 human cases in the US in 2024, one also severe, as well as the BC case, had no recognized animal source.

Further information is available on the Public Health Agency of Canada, BC Centre for Disease Control (BCCDC), US Centers for Disease Control, and Canadian Food Inspection Agency (CFIA) websites.

3.0 IMPACT OF AVIAN INFLUENZA ON HUMAN HEALTH

Significant risks to human health from avian influenza include:

1. Human infection with the avian influenza virus: Although avian influenza A viruses usually do not infect people, rare cases of human infection occur with these viruses following exposure to infected animals, notably poultry and their environments, and more recently dairy cattle and their milk. Illness in humans range in severity from no symptoms or mild illness, including conjunctivitis, to severe disease resulting in death. Sustained human-to-human transmission of avian influenza viruses has not been established but cannot be ruled out.

2. Emergence of a new strain of type A influenza: Influenza viruses are highly changeable. A novel kind of animal influenza A virus could newly adapt to humans through spontaneous mutation, recombination or reassortment with another influenza virus that has already adapted to people. Concurrent infection with avian influenza and human influenza in a human host provides opportunity for genetic reassortment which may facilitate human adaptation and associated pandemic risk. Such a risk is considered a "low probability, high impact" event. To prevent such an event, human exposures to potentially infected animals need to be minimized, so that the risk of acquiring infection is mitigated. In addition, monitoring is necessary to ensure timely identification and

isolation of human cases and the collection of critical information to inform real-time risk assessment.

The Public Health Agency of Canada's Centre for Surveillance, Integrated Insights and Risk Assessment is actively monitoring the risks of avian influenza to public health. Further information on risk assessments for public health professionals is available on the Public Health Agency of Canada website.

3.1 Human Case Definitions

Human Avian Influenza case definitions can be found on the BCCDC webpage.

3.2 Transmission to the Human Population

Potential sources include[10]:

- Exposure to infected animals or their droppings
  - Infected poultry.
  - Infected wild or pet birds.
  - Other infected animals (e.g., cows, goats, cats, foxes, skunks, mustelids, seals, pigs).
- Exposure to products of infected animals
  - Under- or uncooked products from infected birds.
  - Raw milk or raw milk products from infected cows.
- Exposure to contaminated spaces or surfaces
  - Manure and litter of birds or other infected animals (can contain a high concentration of viruses).
  - Surfaces contaminated by bird or other infected animals' dander/body fluids including raw milk or other unpasteurized dairy products, and body parts (e.g., carcasses, internal organs).
  - Contaminated vehicles, equipment, clothing, and footwear at involved sites (e.g., infected poultry or cattle farms).
  - Contaminated air space (e.g., a barn when movement of birds/other infected animals or their litter/manure may have resulted in aerosolization of the virus).
  - Unprotected exposure to biological material (e.g., primary clinical specimens, virus culture isolates) known to contain avian influenza virus in a laboratory setting.
- Close contact with a person under investigation (PUI), probable or confirmed human case.

The survival time of avian influenza viruses in the environment varies based on several factors, including temperature, relative humidity, virus sub-type, and the surface or material on which the

virus is present. Survival times of avian influenza viruses on different substrates are provided on the CFIA website: Survival time of avian influenza viruses - inspection.canada.ca

Avian influenza viruses have not yet acquired the capacity for easy spread from human-to-human, but this must be monitored closely. Because the virus could change and gain the ability to spread easily between people, monitoring for human infection alongside prompt and appropriate isolation of a PUI, probable or confirmed human case is necessary to prevent adapted viruses from spreading.

3.3 Incubation Period

Available data suggest that the estimated incubation period for human infection with avian influenza A (H5N1) and A (H7N9) viruses varies with the nature and intensity of exposure; generally 2 to 5 days but has ranged up to 7-10 days. Even longer periods up to 17 days have, however, also been suggested.[11]

In poultry, the incubation period can be a few hours to a few days in individual birds, and up to 14 days in the overall flock.[12,13] In dairy cattle, the current evidence indicates that the incubation period is variable and ranges from 12 to 21 days.[14]

A 21-day incubation period is used for bird populations and for disease control efforts. This considers the virus's transmission dynamics, such as exhibiting symptoms, transmitting to other birds, and for secondary cases to emerge within a flock.[9]

3.4 Communicability

Limited human-to-human transmission has been reported for avian influenza viruses in general. Among reported situations where transmission occurred, it was in the context of close physical unprotected contact, for example within a household.

3.5 Communicable Period in Human Cases

Reverse transcription polymerase chain reaction (RT-PCR) detection can extend up to 21 days for H5N1 and 20 days for H7N9.[15,16,17] However, the lack of information on shedding of viable virus and of secondary transmission overall make the interpretation of infectivity challenging. Shedding may be assumed at least as long as seasonal human influenza (one day before to seven days after symptom onset), and could be longer in the context of negligible pre-existing immunity (as also for seasonal influenza in children or the immunocompromised).[18]

3.6 Signs and Symptoms

Symptoms of avian influenza in humans may range from no symptoms or mild illness (e.g., conjunctivitis) to severe (e.g., pneumonia or death). Signs and symptoms may include:

- Fever or feverishness
- Conjunctivitis symptoms including redness to sclera, eyelid/conjunctival inflammation, excessive tearing, pruritus, eye pain/burning, discharge, photosensitivity
- Cough
- Rhinorrhea
- Sore throat
- Myalgia/arthralgia
- Headache
- Fatigue
- GI symptoms including abdominal pain, nausea, diarrhea, vomiting
- Respiratory complications including shortness of breath, chest pain, pneumonia, and respiratory failure

4.0 RESPONSE TO AVIAN INFLUENZA IN BIRDS AND OTHER LIVESTOCK

H5 and H7 avian influenza is a reportable animal disease to the Chief Veterinarian (CV) under the Reportable and Notifiable Disease Regulation of the *Animal Health Act*. The CV reports the case to the Provincial Health Officer or delegate (BCCDC) under the Information Sharing Agreement for the Sharing of Zoonotic Communicable Disease Reports.

In addition, HPAI subtypes H5 and H7 regardless of pathogenicity are immediately notifiable by veterinarians to the CFIA under the federal Health of Animal Act and Canadian Notifiable Avian Influenza Surveillance System (CanNAISS).

Successful containment of avian influenza requires a coordinated One Health approach in responding to outbreaks.[19] This involves Public Health working closely with the Ministry of Agriculture and Food (MAF), the CFIA, WorkSafeBC, environment and wildlife health stakeholders, and other livestock industry to coordinate an inter-agency response to an avian influenza outbreak. Depending on the strain of avian influenza involved, and the animal species affected, animal health response activities may differ from outbreak to outbreak.

The CFIA is the lead agency for the animal health response for domestic animals infected with H5 or H7 LPAI or HPAI. The CFIA responds to avian influenza outbreaks by establishing quarantines, ordering the humane destruction of all infected and exposed poultry, conducting trace-out activities, overseeing the cleaning and disinfection of premises, and verifying that affected farms remain free of avian influenza according to international standards. For other livestock infected with H5 or H7 avian influenza, the Ministry of Agriculture and Food, under the authority and support of the CFIA, leads the animal health response. More information from the

CFIA and MAF can be found at these links: latest bird flu situation, situational updates in livestock, and Avian influenza - Province of British Columbia

Upon notification of an avian influenza outbreak with human health implications, public health officials should implement appropriate public health measures. Primary prevention (including infection control and antiviral prophylaxis), case and contact management, risk assessment, and public education should be a top priority.

5.0 MANAGEMENT OF EXPOSURE/CONTACT WITH AN ANIMAL/AVIAN SOURCE

Definition of contact with an animal/avian source: An individual that has been exposed to avian influenza through direct contact with an animal (bird, mammal or other animal) known or highly suspected to be infected, or an environment/object associated with a known or highly suspected avian influenza outbreak.

5.1 Human Exposure (Contact) Management

In poultry setting:
Public health should obtain a list of all individuals entering an infected poultry premise in the 21-day period prior to the onset of obvious clinical signs in the birds to determine those who may have been exposed. The incubation period for HPAI is highly variable, ranging from a few hours in individual birds to 2 weeks in the flock.[20,21] A 21-day period, considers evolution of the outbreak such as initial seeding, replication and transmission dynamics, manifestation of symptoms, outbreak detection, etc. It allows for more complete assessment, containment and control.

In other livestock setting:
Public health should obtain a list of all individuals entering an infected non-poultry livestock premise since the onset of clinical signs in the given livestock herd and throughout the duration of the outbreak in the herd to determine who may have been exposed. Based on the animal species affected and what is known about the incubation period and transmission dynamics in the species, further traceback of contacts may be required in close consultation with BCCDC and the CV.

Public health follow-up with all potentially exposed individuals includes:

- Assess exposure (see Exposure Risk Assessment below).
- Inquire about symptoms.
- Assess for chemoprophylaxis or treatment.
- Provide education.
- Arrange for active or passive surveillance.

5.2 Management of Asymptomatic Exposed Individuals

- Provide instructions to self-monitor for symptoms for 10 days after the last exposure to a known or highly suspected source of avian influenza virus, and report any symptom development immediately to public health, including conjunctivitis and other symptoms as listed in 3.6. See Appendix 1 for self-monitoring considerations. While an incubation period of greater than 10 days would be unexpected, it is reasonable to offer testing to individuals who become symptomatic as late as 14 days after last exposure to account for variability in the incubation period and possible changes in epidemiological features.
- Active daily monitoring is generally recommended for higher risk exposures (see Exposure Risk Assessment) or if there are concerns about the contact's ability or willingness to complete passive monitoring (e.g., cognitive impairment or transient population).
- As an alternative to active daily monitoring, contacts may be instructed to self-monitor for symptoms. With a passive monitoring approach, public health is recommended to conduct a follow-up call or other method of active engagement at the end of the monitoring period.
- Post-exposure antiviral prophylaxis should be considered based on risk assessment (e.g., for those with underlying comorbidity or intense exposure - see below section on Exposure Risk Assessment). Note that treatment doses are recommended even for prophylaxis indications.
- Per routine Seasonal Influenza Vaccine Eligibility, people with close and prolonged contact with animals known to be susceptible to influenza including poultry, dairy and swine industry workers are recommended to have seasonal influenza vaccine to reduce the potential for human-avian re-assortment of genes should such workers become co-infected with human and avian influenza.

5.3 Management of Symptomatic Exposed Individuals

- Those who develop symptoms should isolate immediately and be assessed by a health care provider for clinical management, including testing and antiviral treatment.
- Testing should be performed, as detailed in section 5.6 Testing.
- Antivirals should be readily available for the treatment of suspected and confirmed cases of avian influenza. Antiviral drugs such as oseltamivir or zanamavir can reduce the duration of illness and improve the prospect of survival if administered within 48 hours of illness onset. If avian influenza infection is suspected, antiviral treatment should be provided without delay. Waiting for lab confirmation is not recommended.
- The person should be advised on appropriate isolation protocols, specifically to stay away from others for seven days from symptom onset or until symptoms resolve, whichever is longer. If household contacts develop symptoms before test results are available, they should also isolate and notify public health. Healthcare providers should

advise a case and/or their family or household members when and where to seek additional care if required, appropriate mode of transportation, and any other appropriate infection prevention and control precautions to be followed.

- Active daily follow-up of the case following symptom onset should be considered where there may be concerns related to adherence with public health recommendations; otherwise, follow-up with the case at the end of the isolation period may be undertaken to ensure symptom resolution, no ongoing exposure, and no other contacts identified.
- If the test is negative for influenza virus, consider retesting and collecting another specimen if the clinical suspicion for avian influenza was high.
- For confirmed cases of avian influenza, additional follow-up will be required to identify exposures, risk factors, and follow-up of contacts.

5.4 Exposure Risk Assessment

Management of individual contacts is based upon exposure risk assessment and consideration of other factors specific to the individual or situation. Individuals who have exposures falling into more than one risk group should be managed based on their highest risk exposure.

High exposure risk groups:

- Individuals with insufficient personal protective equipment (PPE) and very close exposure to a flock or group of sick or dead animals infected with avian influenza or to particular animals that have been directly implicated in human cases (e.g., farm family member or worker who handled sick animals).
- Milk technicians/individuals who milk or handle milk from infected cattle with insufficient PPE.
- Individuals involved in the handling and slaughtering of live poultry and other animals, such as in a live animal market, in an area with infected animals or visitors to an area where such activities are being undertaken while unprotected.
- Household/family contacts of, or unprotected face-to-face interaction with a PUI, probable or confirmed human avian influenza case during the expected period of communicability.
- Personnel involved in handling sick animals or exposed to affected environments (including animal disposal) as part of outbreak control efforts (e.g., cullers) and where consistent use of PPE cannot be assured.
- Healthcare workers (i.e., those working in a setting where healthcare is being provided) who had no, or insufficient, PPE in place when 1) in close contact with a confirmed human avian influenza case, or 2) in direct contact with respiratory secretions or other potentially infectious specimens from the case (including aerosol-generating medical procedures (AGMP).
- Healthcare workers or laboratory personnel who might have unprotected contact (i.e., did not have or was wearing insufficient PPE) with specimens/secretions which contains virus or with laboratory isolates.

Moderate exposure risk groups:

- Individuals who handle single or small groups of sick or dead animals infected with avian influenza in an open-air environment which is not densely populated by animals of the same species as the infected animal (e.g., single wild bird in a park) without PPE.

Low exposure risk groups:

- Personnel involved in culling non-infected or likely non-infected animal populations as a control measure (e.g., those exclusively culling asymptomatic animals in a control area outside of the infected and restricted zones).
- Personnel involved in handling sick animals or exposed to affected environments (including proper animal disposal) as part of outbreak control efforts (e.g., cullers) and where consistent use of PPE can be reasonably assured.
- Individuals who handle (i.e., have direct contact with) asymptomatic animals in proximity to a geographic area where avian influenza has recently been identified (e.g., bird banders).
- Healthcare workers who used appropriate PPE during contact with human avian influenza cases.
- Laboratory personnel working with the influenza virus using appropriate laboratory procedures and infection control precautions.

5.5 Antiviral Prophylaxis and Treatment

- Chemoprophylaxis with influenza antiviral medications can be considered for the purposes of protecting the individual and/or preventing further transmission. The following table provides guidance for the use of post-exposure antiviral chemoprophylaxis; the decision to initiate post-exposure antiviral chemoprophylaxis should be based on clinical judgment, with consideration given to risk assessment and the following factors:
    - The use of PPE, and whether any breaches occurred.
    - The type and duration of exposure (e.g., farm workers working directly with affected birds, open air versus closed air environment).
    - The time since exposure - ideally administered as early as possible (ideally within two days) following exposure, to optimize effectiveness.
    - Whether the exposed person is at higher risk for complications from influenza more generally (refer to the National Advisory Committee on Immunization list of People at High Risk of Influenza-Related Complications or Hospitalization).
    - Known infection status of the birds/animal to which the person was exposed.
    - Whether human-to-human/swine transmission is known to occur with this subtype (known to occur with H5N1).

- Potential for secondary human-to-human/swine transmission depending on social environment/farm environment (e.g., number and intensity of interactions with humans or swine).

Post-exposure Antiviral Prophylaxis Recommendations		Exposure Risk Assessment		
		Low Risk	**Moderate Risk**	**High Risk**
Human Illness Risk	**Subtype of avian influenza is not known to have caused human illness**	no prophylaxis	no prophylaxis	consider offering prophylaxis
	Subtype of avian influenza is known to cause human illness	no prophylaxis	consider offering prophylaxis	offer prophylaxis

If post-exposure antiviral chemoprophylaxis is initiated, treatment dosing for the neuraminidase inhibitor oseltamivir[A] (one dose twice daily) is recommended instead of the typical antiviral chemoprophylaxis regimen (once daily).[B] Other Health Canada-authorized antivirals may be considered in specific situations, such as when resistance to oseltamivir is detected. Post-exposure prophylaxis for HPAI prevention should continue for ten days after the last day of exposure. This is intended to span a longer possible incubation period for avian influenza than seasonal influenza strains, and to ensure an adequate course of therapy in the event infection ensues.[22,23]

If the exposed person becomes symptomatic and avian influenza infection is suspected based on exposure, antiviral treatment should be provided without delay. Waiting for lab confirmation is not recommended. Although ideally initiated within two days of symptom onset, even if more than 48 hours have elapsed consideration should be given to initiating antiviral treatment due to the potential for severe illness. Twice daily treatment dosing is the same as for post exposure prophylaxis, typically for 5 days, but potentially longer depending upon patient progress and clinical discretion.

[A] Oseltamivir is currently the preferred antiviral for use in avian influenza (AI) due to its widespread availability, efficacy and effectiveness data in avian influenza (although limited), favourable side effect and drug interaction profile, and currently very low prevalence of antiviral resistance in AI[23].

[B] This recommendation for twice daily antiviral chemoprophylaxis dosing frequency is based on limited data that support higher chemoprophylaxis dosing 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).

Pre-exposure prophylaxis (PrEP) is not a routinely recommended approach in the context of adequate implementation of infection control practices, such as compliant PPE and biosecurity as effective measures in prevention. However, PrEP may be considered on a case-by-case basis depending upon specific conditions and risk factors.

5.6 Testing

Clinicians should have a low threshold for seasonal and avian influenza virus testing of individuals with clinically compatible symptoms[C] who report sick bird/animal or other exposures of concern[D] within the ten days prior to onset.

When testing is indicated, a nasopharyngeal AND throat swab should be collected as close to the onset of illness as possible, preferably within five days of onset, however clinicians should have a low threshold for testing beyond this time frame as prolonged replication or detection may be possible with avian influenza infection in humans. Collecting a conjunctival swab for persons presenting with conjunctivitis may increase diagnostic yield; as these cases may be missed with other specimens. Specimens can be sent to local laboratories for fluA and H1/H3 subtyping, if available. If fluA positive and H1/H3 negative or unknown, specimens should be sent to the BCCDC Public Health Laboratory (PHL) for H5 testing. The BCCDC PHL eLab Handbook provides testing information, including ordering procedures, process information, specimen collection instructions, and handling and transport instructions.

On the lab requisition, tick off the “Avian influenza” box and include notes in “relevant exposure or history” section. The BCCDC Medical Microbiologist on-call should be notified of the case and testing request at 604-661-7033. Anyone with exposure of concern who develops symptoms should be reminded to disclose that exposure when presenting for care. Additionally, those who routinely work with poultry or animals, who develop respiratory symptoms or other hallmark symptoms (e.g. conjunctivitis) should always identify themselves as an at-risk agricultural worker when seeking care to ensure proper management including testing and documentation of the possible exposure on the requisition.

Nucleic acid amplification testing (NAAT) (i.e., PCR test) is the primary method used to detect infection with influenza A and its subtypes, and further characterization can be confirmed with

[C] **Clinical signs/symptoms**: conjunctivitis (red eye, discharge from eye) or acute respiratory or influenza-like illness with one or more of cough, sore throat, fever or feverishness, rhinorrhea, fatigue, myalgia, arthralgia, headache. May include moderate (e.g., shortness of breath, difficulty breathing, altered mental status, seizures) or severe manifestations (e.g., pneumonia, respiratory failure, acute respiratory distress syndrome, multi-organ failure, meningo- encephalitis). Gastro-intestinal symptoms may also be present.

[D] **Exposures of concern:** Close exposure (within 2 meters) to a bird, animal, or other human with confirmed avian influenza A virus infection. 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. Where avian influenza test results are not available but there is a high index of suspicion and other exposure criteria are met, also consider testing. If during on-site depopulation of birds, last exposure includes when birds are depopulated and all carcasses are disposed, and all cleaning and disinfection has been completed on the premises. Unprotected laboratory exposure also qualifies as testing indication.

sequencing. Although serological testing is not routinely available, it can be arranged elsewhere (e.g., National Microbiology Laboratory) and/or at a subsequent time (e.g., acute and convalescent sera). However, blood collection is ideally timed and spaced in relation to exposure and/or symptom onset and should be primarily considered for public health investigation as it does not diagnose active infection. Discuss blood collection and possible holding for zoonotic influenza testing if/when/where available with the patient.

If the test is negative for influenza virus, consider retesting and collecting another specimen if the clinical suspicion for avian influenza was high and especially if there are indications of poor sample quality.

5.7 Infection Control

Individuals within an environment where avian influenza virus is a recognized threat should take precautions to minimize risk of infection, including:

- Avoid direct contact with wild and domestic birds, manure, or other surfaces that may be contaminated with avian influenza virus.
- Farm personnel and residents not directly involved in culling activities should avoid exposure to infected birds, manure, or surfaces that may be contaminated with avian influenza virus.
- Personnel involved in culling activities and/or environmental clean-up who may be exposed to infected birds, manure, or surfaces that may be contaminated with avian influenza virus should wear appropriate PPE.
- For recommendations on infection prevention and control of avian influenza in healthcare settings, refer to Public Health Agency of Canada guidance and PICNET guidance.

5.8 Personal Protective Equipment

PPE, when used consistently and appropriately, reduces an individual's risk of infection with avian influenza. PPE is recommended for people that may be exposed to both avian/animal and human cases of avian influenza.

5.8.1 PPE in a Farm Setting

Farm personnel that participate in outbreak control efforts, including culling activities or environmental clean-up, must follow PPE recommendations to minimize risk of infection. Refer to the AgSafe: Avian Influenza webpage for guidance on the recommended PPE in a farm setting. These include, but are not limited to:

- Fit-tested N95 respirator
- Protective eye wear

- Reusable gloves
- Protective clothing (re-usable if washed immediately after use, or disposable)

5.8.2 PPE in a Healthcare Setting

During assessment, testing and care, or procedures, clinicians should implement droplet and contact precautions, and avoid performing aerosol-generating medical procedures (AGMP) unless medically necessary. If an AGMP is necessary, use airborne, droplet, and contact precautions. Refer to the PICNET guidance.

6.0 REPORTING AND TIMELINES

6.1 Animal Cases

Laboratories and veterinarians should notify the CV of any laboratory-confirmed animal case in BC. The CV should notify BCCDC's public health veterinarian (PHV) and the PHV, or their delegate, will notify the MHO and CD unit in the affected health authority. Reporting of the animal case to the BCCDC and onward to the MHO should occur within 24h of diagnosis.

6.2 Human Cases

Healthcare providers should report any symptomatic individuals who have known avian influenza exposure in the 10 days prior to symptom onset to local public health. When testing is requested for symptomatic individuals with known avian influenza exposure, the microbiologist on call at the BCCDC PHL should be notified of the case and testing in advance at 604-661-7033.

Confirmed and probable human cases (see Human Case Definitions) should be reported by local public health to BCCDC within 24 hours, via the health authority's respective electronic public health reporting system and/or the Avian Influenza Case Report Form.

6.3 Public Education

While the risk of avian influenza in the human population is low, individuals can take action to protect themselves and others[2]:

- Avoid unnecessary contact with poultry, wild birds, and animals or their droppings, especially if they are sick, dead, or displaying unusual behaviours.
- Avoid contact with surfaces contaminated with bird/animal droppings or secretions or raw milk.
- Avoid consuming unpasteurized milk or unpasteurized dairy products.
- Ensure eggs and poultry dishes are well cooked.

- Boil any untreated water from areas where waterfowl gather (ponds, lakes, rivers) prior to consumption.
- Get an annual flu shot. Per routine Seasonal Influenza Vaccine Eligibility, people working with influenza-susceptible animals including poultry, dairy and swine industry workers are recommended to receive the seasonal influenza vaccine to reduce the potential for human-avian re-assortment of genes should such workers become co-infected with human and avian influenza.
- Follow all general public health recommendations to prevent illness and infection including covering your cough, frequent hand washing with soap and water, and staying home when you are sick.
- Follow workplace health guidance related to avian influenza prevention.
- Pet owners should monitor their pets closely to ensure they do not come into contact with sick or dead birds and animals or their droppings. They should not be fed any raw meat or other products from game birds, poultry, or other animals infected with avian influenza. If pets develop signs of illness after exposure to sick or dead animals, owners should consult with their veterinarian. For more information on precautions for pets see the CFIA's guidance on pets and avian flu.
- When planning travel, check the travel health notices for potential health risks to Canadian travellers.

7.0 REFERENCES

1. Public Health Agency of Canada. Guidance on Human Health Issues related to Avian Influenza in Canada; 2023 [Internet] [cited 2023 Jul 10]. Available from https://www.canada.ca/en/public-health/services/publications/diseases-conditions/guidance-human-health-issues-avian-influenza.html

2. Swayne DE. Avian Influenza in Poultry and Wild Birds [Internet]. Merck Veterinary Manual. Merck Veterinary Manual; 2021 [cited 2022 May 14]. Available from: https://www.merckvetmanual.com/poultry/avian-influenza-in-poultry-and-wild-birds/avian-influenza-in-poultry-and-wild-birds

3. World Health Organization. Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2025, 20 January 2025 [Internet]. WHO; 2025 Jan 20 [cited 2025 Jun 4]. Available from: https://www.who.int/publications/m/item/cumulative-number-of-confirmed-human-cases-for-avian-influenza-a(h5n1)-reported-to-who--2003-2025--20-january-2025

4. USDA Animal and Plant Health Inspection Service, US Department of Agriculture. HPAI Confirmed Cases in Livestock [Internet]. USDA APHIS; 2025 Jan 16 [cited 2025 Jun 4]. Available from: HPAI Confirmed Cases in Livestock | Animal and Plant Health Inspection Service

5. Caserta LC, Frye EA, Butt SL, Laverack M, Nooruzzaman M, Covaleda LM, et al. Spillover of highly pathogenic avian influenza H5N1 virus to dairy cattle. Nature. 2024;634(8034):669-76.

6. Plaza PI, Gamarra-Toledo V, Rodriguez Eugui J, Rosciano N, Lambertucci SA. Pacific and Atlantic sea lion mortality caused by highly pathogenic Avian Influenza A(H5N1) in South America. Travel Med Infect Dis. 2024;59:102712.

7. Aguero M, Monne I, Sanchez A, Zecchin B, Fusaro A, Ruano MJ, et al. Highly pathogenic avian influenza A(H5N1) virus infection in farmed minks, Spain, October 2022. Euro Surveill. 2023;28(3).

8. Canadian Food Inspection Agency (CFIA). Milk sampling and testing for highly pathogenic avian influenza (HPAI) in Canada [Internet]. CFIA; 2025 Jun 2 [cited 2025 Jun 4]. Available from: https://inspection.canada.ca/en/animal-health/terrestrial-animals/diseases/reportable/avian-influenza/latest-bird-flu-situation/hpai-livestock/milk-sampling-and-testing

9. Government of British Columbia. First presumptive positive case of H5 avian influenza detected in B.C. [Internet]. Government of British Columbia; 2024 Nov 9, [Cited 2025 Jun 4]. Available from: https://news.gov.bc.ca/releases/2024HLTH0152-001583

10. Centre for Food Security & Public Health. Avian influenza [Internet]. 2024 [cited 2025 Jan 31]. Available from: https://www.cfsph.iastate.edu/Factsheets/pdfs/highly_pathogenic_avian_influenza.pdf

11. World Health Organization. Influenza (Avian and other zoonotic) [Internet]. WHO; 2018. [cited 2025 Jun 5]. Available from: https://www.who.int/news-room/fact-sheets/detail/influenza-(avian-and-other-zoonotic)

12. World Organization for Animal Health (WOAH). Terrestrial Code Online Access. [Internet]. WOAH; 2023. [Cited 2025 Jun 5]. Available from: https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/?id=169&L=1&htmfile=chapitre_avian_influenza_viruses.htm.

13. Canadian Food Inspection Agency (CFIA). Facts about Avian Influenza [Internet]. CFIA; 2024 [cited 2025 Jun 5]. Available from: https://inspection.canada.ca/en/animal-health/terrestrial-animals/diseases/reportable/avian-influenza/facts-about-avian-influenza.

14. United States Department of Agriculture (USDA)- Animal and Plant Health Inspection Service. Case Definition - Avian Influenza (AI) (Notifiable) [Internet]. USDA APHIS; 2024 [cited 2024 Aug 15]. Available from: https://www.aphis.usda.gov/sites/default/files/hpai-livestock-case-definition.pdf

15. World Health Organization. Avian Influenza Weekly Update Number 958 Human infection with avian influenza A(H5) viruses [Internet]. WHO; 2024 [cited 2023 May 16]. Available from: https://uploads.geobingan.info/attachment/f410dd3f64334514950dc62c356e2e99.pdf

16. Cowling BJ, Jin L, Lau EHY, et al. Comparative epidemiology of human infections with avian influenza A H7N9 and H5N1 viruses in China: a population-based study of laboratory-confirmed cases. The Lancet. 2013 Jul;382(9887):129-37.

17. World Health Organization (WHO) Writing Committee. Update on avian influenza A (H5N1) virus infection in humans. New England Journal of Medicine. 2008;358:261-73.

18. Chen Y, Liang W, Yang S, Wu N, Gao H, Sheng J, et al. Human infections with the emerging avian influenza A H7N9 virus from wet market poultry: clinical analysis and characterisation of viral genome. The Lancet. 2013 Jun;381(9881):1916–25.

19. World Organization for Animal Health. Terrestrial Code Online Chapter 10.4 Infection with High Pathogenicity Avian Influenza Viruses [Internet]. WOAH; 2024 [cited 2025 Jan 31] Available from: https://www.woah.org/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/.

20. Centre for Disease Control and Prevention. Influenza (Flu) [Internet]. CDC; 2021 [cited 2023 May 1]. Available from: https://www.cdc.gov/flu/about/index.html.

21. Centre for Disease Control and Prevention. Past Reported Global Human Cases with HPAI (H5N1) by Country, 1997-2024 [Internet]. CDC; 2024. [cited 2023 May 16]. Available from: https://www.cdc.gov/bird-flu/php/avian-flu-summary/chart-epi-curve-ah5n1.html.

22. Association of Medical Microbiology and Infectious Disease (AMMI) Canada. AMMI Canada Statement on Antiviral Therapy for HPAI and Reported Oseltamivir Resistance in Canada [Internet]. AMMI; 2025 Feb 24. [cited 2025 Jun 05]. Available from: Antivirals-H5Nx-statement-FINAL-2025.03.07pdf.pdf

23. Public Health Agency of Canada. Guidance on human health issues related to avian influenza in Canada (HHAI) – Section 11.0 [Internet]. PHAC; 2025. [Cited 2025 Jun 05]. Available from: https://www.canada.ca/en/public-health/services/publications/diseases-conditions/guidance-human-health-issues-avian-influenza.html#a11

8.0 APPENDIX 1: SELF-MONITORING CONSIDERATIONS

- Advise contacts to self-monitor for the appearance of symptoms for 10 days from the last exposure. (If someone with known exposure reports symptoms thereafter (e.g. on days 11-14), testing should still be considered).This includes taking and recording their temperature daily and avoiding the use of fever reducing medications (e.g., acetaminophen, ibuprofen) as much as possible. These medications could mask an early symptom of infection.
    - If symptoms occur, they should isolate away from others as quickly as possible and contact public health for further direction, which will include where to go for care, appropriate mode of transportation to use, and infection and prevention control precautions to be followed.
- Provide advice on restriction of movement of contacts - this includes recommendations not to visit other farms to avoid serving as a vehicle for the spread of contaminated materials. Contacts should also avoid interactions with individuals at higher risk for severe illness, high-risk settings, and large gatherings for 10 days following last exposure.
- Provide advice on minimizing further exposure. Those involved in the care, culling or cleaning up of infected birds or their environments should wear PPE.
- More strict quarantine measures would be considered if the outbreak involved a virus that was causing severe illness in humans or there was evidence that it could be spread efficiently from human-to-human.