

**Human Health Issues related to Domestic Avian Influenza Outbreaks**

**May 2005**

Canadian Pandemic Influenza Committee and affiliated Working Groups.



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**Acknowledgements:** Annex D was provided by the BC Centre for Disease Control (BCCDC) and modified slightly in this document to remove specific references to local public health authorities in BC. Annexes F, H, I and J were developed and distributed by the BCCDC and Fraser Health Authority during the 2004 H7N3 avian influenza outbreak. Annex F was developed by the BCCDC for use during the 2004 avian influenza H7N3 outbreak in British Columbia with input from scientists who were previously involved in the response to an avian influenza H7N7 outbreak in the Netherlands in 2003. Annex G, developed by VPRIS, is a generic version of Annex F. Annex K was developed by the BCCDC Pharmacy Services for specific use in managing the BC outbreak. Further use or modification of any of the annexes developed specifically for the BC outbreak would constitute use outside of the document(s) originally intended purpose and therefore it would be up to the distributor/modifier/user to verify that the content is appropriate for the new situation.

The provision of these documents for the purpose of national resource sharing is appreciated, as these documents are anticipated to be a useful tool for other jurisdictions that may have to deal with similar outbreaks in the future.

## 1 Introduction

Avian Influenza is a contagious viral infection that can affect all species of birds (poultry, exotic and pet birds, and wild fowl), although some are more resistant to infection than others<sup>1</sup>. Avian influenza viruses do not normally infect species other than birds and pigs; however several instances of human infections and outbreaks of avian influenza have been reported internationally since 1997.

The purpose of this document is to provide recommendations for public health authorities and other stakeholders involved in the management of actual and potential human health issues related to domestic avian influenza outbreaks<sup>2</sup>. The management of the avian component of the outbreak response would be overseen by the Canadian Food Inspection Agency (CFIA) and is therefore not specifically addressed in this document. Information on avian influenza and outbreak management from an animal health perspective can be found on the CFIA website and on the OIE (World Organization for Animal Health) website (see section 2.1 below).

In this document the recommendations have been organized to align with certain components of the pandemic plan, specifically: surveillance, public health measures, infection control, antivirals, and vaccine programs. This document is intended to serve as a reference for jurisdictions dealing with an outbreak of avian influenza. Other jurisdictions, not directly affected by the outbreak, are encouraged to refer to the sections of the Canadian Pandemic Influenza Plan that correspond to the pandemic phase (e.g., POL1 or POL2) as indicated by the epidemiological findings from the outbreak.

The objective of this document is to provide recommendations aimed at:

- protecting individuals who are involved in the response to an outbreak of highly pathogenic avian influenza
- controlling the outbreak in the human population<sup>3</sup> (if applicable)
- minimizing the risk of viral reassortment (i.e., mixing of genes from human and avian viruses)

The health risk to humans from low pathogenic avian influenza viruses is less well established, but is likely to be lower. Although this document focuses on highly pathogenic avian influenza (HPAI), it is considered prudent to take all possible precautions to the extent feasible when individuals have contact, as part of control and eradication activities, with birds infected by any avian influenza virus.

## 2 Background

Avian influenza is an infectious disease of birds caused by type A strains of influenza virus. Since the clinical signs of avian influenza can resemble other diseases, such as Newcastle

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<sup>1</sup> Although all birds are thought to be susceptible, not all species are equally susceptible or affected by avian influenza viruses (e.g., pigeons resist infection with avian influenza) Ref 1, 2, 3.

<sup>2</sup> It is expected that these recommendations would also be applicable to outbreaks of influenza in pigs (i.e., the humans involved in such outbreaks), with consideration given to the unique aspects of such an outbreak at the time.

<sup>3</sup> If efficient human to human transmission occurs and the outbreak is not contained through the use of the recommended control measures, then all jurisdictions should use the Canadian Pandemic Plan to respond to this pandemic threat.

Disease (in poultry), the diagnosis of avian influenza must be made on the basis of laboratory confirmation. In birds, all of which are thought to be susceptible, influenza viruses cause a wide spectrum of symptoms, with a disease expression that ranges from mild illness to a highly contagious and rapidly fatal disease. The latter form has resulted in severe epidemics, characterized by sudden onset, severe illness and rapid death of affected birds/flocks, with a mortality rate that can approach 100%. In these circumstances the strain is referred to as “highly pathogenic” due to the observed morbidity and mortality in affected flocks. PCR testing of the avian influenza virus can also result in a particular virus being labeled as “highly pathogenic”. The degree of correlation between laboratory-determined pathogenic potential, and pathogenic behaviour as evidenced by the negative outcomes in the affected flock, is unclear. For the purposes of this document either finding should trigger the recommended control measures with the duration and aggressiveness of the control measures being determined by the epidemiological data available at the time of the outbreak.

In the 1960’s when turkeys were often raised outdoors, cases of low pathogenic avian influenza were often reported in the autumn. One of the viruses isolated in 1966 was later found to meet the modern criteria of a highly pathogenic influenza virus. Since 1975, low pathogenic avian influenza – subtypes H5 and H7 – has been detected three times in domestic poultry in Canada, most recently in 2000 (4). The ability of these low pathogenic strains to cause illness in humans has not been well established but is likely to be lower than highly pathogenic strains.

Highly pathogenic strains of avian influenza virus have crossed from birds to humans and have caused disease in humans (5). To date implicated strains have included: H5N1, H9N2, H7N7, H7N2<sup>4</sup> and most recently H7N3. Human fatalities have been observed with the H5N1 strain in Hong Kong in 1997 and 2003 and in Vietnam and Thailand in 2004. A single fatality was also associated with the H7N7 in the Netherlands in 2003 (6).

Avian influenza infection in humans is believed to be primarily the result of contact with infected poultry and under or un-cooked poultry products, infected wild or pet birds, manure and litter containing high concentrations of virus, contaminated surfaces, and contact with contaminated vehicles, equipment, clothing and footwear at involved sites (e.g., infected poultry farms). Direct contamination of the mucous membranes by infectious droplets or inhalation of aerosolized viruses are other possible transmission routes.

The predominant global concern is that these outbreaks are a potential opportunity for viral reassortment. Since simultaneous infection with human influenza and avian influenza viruses give the avian and human viruses an opportunity to exchange genes, one possible outcome is the development of a new influenza virus subtype with pandemic potential.

According to the World Health Organization (WHO) pandemic phases, identification of a novel virus (e.g. avian) in a human denotes the beginning of Phase 0 Level 1. This situation raises the level of pandemic preparedness activity for all jurisdictions since this finding is considered to be a potential precursor to a pandemic. Detection of the novel virus in two or more individuals (in the absence of evidence of human to human transmission) is considered to be an indicator that the novel virus is infectious for humans and corresponds to the onset of Phase 0 Level 2. Phase 0 Level 3 is characterized by sustained human-to-human transmission of the novel virus.

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<sup>4</sup> Recently a single case of H7N2 infection was retrospectively identified in an individual who had recovered from a respiratory illness (including chest x-ray changes) that occurred in the United States in November 2003. This case was reported to the WHO on April 19, 2004 after it was laboratory confirmed by the CDC, Atlanta.

Since wild fowl, including migratory birds, can serve as a reservoir for these viruses, the first opportunity for public health intervention occurs when the virus is detected in a controlled flock. The recommendations in this document include not only control measures but also preventative measures that should be implemented immediately in order to ultimately decrease pandemic potential. Education of all stakeholders, ideally in advance of avian outbreaks as part of pandemic preparedness activities, but definitely as part of the first response to an outbreak, should be given high priority as awareness of the potential consequences of these outbreaks may facilitate compliance with recommended control measures.

## **2.1 Sources of Additional information**

Canadian Food Inspection Agency website:

<http://www.inspection.gc.ca/english/anima/heasan/disemala/avflu/avflue.shtml>

OIE (World Organization for Animal Health) website:

[http://www.oie.int/eng/en\\_index.htm](http://www.oie.int/eng/en_index.htm)

Public Health Agency of Canada website(s):

[http://www.phac-aspc.gc.ca/influenza/avian\\_e.html](http://www.phac-aspc.gc.ca/influenza/avian_e.html)

<http://www.phac-aspc.gc.ca/fluwatch/index.html>

WHO avian influenza website:

[http://www.who.int/csr/disease/avian\\_influenza/guidelines/en/](http://www.who.int/csr/disease/avian_influenza/guidelines/en/)

## **3 Terminology**

This section is intended to clarify some of the terminology that is included in this document. The case definitions (i.e., for suspect and confirmed case) below are a modified version of the outbreak case definitions developed by the British Columbia Centre for Disease Control (BCCDC) and the Vaccine Preventable and Respiratory Infections Surveillance Committee (VPRIS) for use in the B.C. outbreak.

A National Case Definition is needed to assist with the identification of affected individuals, to assist with the assessment of human health risks and to assist with the direction of public health and surveillance activities. National Case Definitions allow for common and consistent communication both nationally and internationally and, being an integral part of surveillance, the case definitions help to inform the pandemic phase. The process for developing a specific national case definition relies on the clinical presentation and laboratory techniques that are associated with identifying the illness. The identified clinical presentation can change as more epidemiologic information becomes available and this may require an update to the case definition. National definitions that include categories for confirmed cases, suspect cases and asymptomatic or atypical infections are preferred. The latter two categories can assist with the management and investigation of potential cases as well as be a place holder should the confirmed case definition be updated to include some of the asymptomatic or atypical infections. Since the case definitions are meant to be used nationally, their development should be through consensus and in collaboration with the federal, provincial and territorial working group that has been developed to assist with issues surrounding national surveillance, currently this working group is named the Vaccine Preventable and Respiratory Infections Surveillance Committee (VPRIS). It is expected that the definition indicated below will serve the initial need for a

National Case definition until a more formal process can be undertaken. This definition would need to be adapted for a specific outbreak situation by the province or territory involved in the outbreak in collaboration with VPRIS or the Public Health Agency of Canada as necessary.

The actual case definitions used in British Columbia during the 2004 outbreak are included in Annex A as a sample of H7 outbreak case definitions. The WHO case definitions for H5 outbreaks are included in Annex B. In the situation where an outbreak occurs and it is known to be a H7 or H5 strain, then the case definitions in the Annexes can serve the initial need for a National Case Definition until a more formal process can be initiated.

### **3.1 Case Definitions**

#### **Suspect Case**

An individual presenting with:

- onset of 2 or more of conjunctivitis\* and/or influenza-like illness (ILI)\*\* symptoms occurring between 1 day after first exposure/ contact and 7 days after last exposure/ contact, inclusive, to a potential source of avian influenza\*\*\* virus,

AND

- symptoms not fully attributable to another known etiology.

#### **Confirmed Case**

An individual who fulfills the criteria of a suspect case and has laboratory confirmation of avian influenza virus in any specimen(s) from the eye (conjunctival swab), respiratory tract (nasal or nasopharyngeal swab or nasal wash) and/or serology by at least one of the following:

- 1) Virus isolation in cell culture
- 2) RT-PCR (confirmed by another RT-PCR test on a second specimen sample)
- 3) Evidence of sero-conversion from acute and convalescent sera, taken at a 2 week interval, with a four-fold rise in antibody titre.

Note: See Annex C for specific recommendations regarding laboratory testing.

#### **\*Conjunctivitis Symptoms:**

- red eye, eyelid/ conjunctiva inflammation (swelling), tearful eye, itching eye, painful eye, burning eye, discharge from eye, or sensitivity to light.

#### **\*\*Influenza-like Illness (ILI) Symptoms:**

- fever (if measured, greater than 38C), cough, rhinorrhea, sore throat, myalgia/arthralgia, or headache

#### **\*\*\*Source of avian influenza virus:**

Known sources include:

- infected poultry and under or un-cooked poultry products,
- infected wild or pet birds,

- other infected animals (e.g. pigs)
- manure and litter containing high concentrations of virus,
- contaminated surfaces,
- contaminated vehicles, equipment, clothing and footwear at involved sites (e.g., infected poultry farms), OR
- Contaminated air space (e.g. a barn when movement of birds or manure may have resulted in aerosolization of the virus, or proximity to barn exhaust fans)
- Individuals known to be infected with an avian influenza virus<sup>5</sup>

**Note:** For outbreak control purposes a flock, location (e.g. farm), or an ill individual with a history of exposure to an avian source of virus, might be considered a “potential source of avian influenza virus” in the absence of confirmed infection.

### **3.2 Other Terminology/Definitions**

#### ***Asymptomatic or Atypical Infection***

An individual that has:

- no clinical symptoms, OR
  - a clinical presentation unique from that of a suspect case,
- AND
- has laboratory confirmation (i.e. as detailed for a confirmed case) of an infection with avian influenza.

#### ***Contact – avian/animal source***

An asymptomatic individual who has been in direct contact with an avian source or potential avian source of avian influenza virus (see list above). (i.e., this excludes individuals whose only exposure was to another individual known to be infected with an avian influenza virus.)

Note: For surveillance purposes, if this individual develops symptoms and meets the case definition they would be referred to as a “primary case”. However, if the individual develops a confirmed infection but is asymptomatic or atypical in clinical presentation, they would be considered to have a primary source infection.

#### ***Contact – human source***

An asymptomatic individual who has been in close contact with an individual known to be or suspected to be infected with an avian influenza virus.

Note: For surveillance purposes, if this individual develops symptoms and meets the case definition they would be referred to as a “secondary case”. However, if the individual develops a confirmed infection but is asymptomatic or atypical in clinical presentation, they would be considered to have a secondary source infection.

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<sup>5</sup> With the exception of this source (i.e. an infected human), all other sources are considered “avian/animal sources”.

## ***Affected site***

Any site at which:

- avian influenza has been laboratory confirmed in one or more birds, OR
- a higher than normal rate of morbidity or mortality consistent with avian influenza has been observed in one or more flocks.

## **4 Roles and Responsibilities**

Due to the lack of outbreaks with highly pathogenic avian influenza in Canada, the roles and responsibilities of various responders and stakeholders have not been previously compiled in one document for the purpose of national consensus.<sup>6</sup> The recent outbreak in British Columbia has highlighted the importance in having these roles and responsibilities clearly defined in order to ensure appropriate and timely communication and optimal implementation of the outbreak response. As part of the response to the BC 2004 outbreak, lead agencies responsible for enhanced surveillance recommendations, public health recommendations and clinical occupational health responsibilities for each type of worker potentially involved in the response, were identified and agreed upon on a teleconference involving the participants from the lead agencies (8). This information, which was compiled in table format, is provided in Annex D of this document with minor modifications to remove BC-specific references. The intention is that this table could be used as a starting point to clarify roles and responsibilities at the outset of any future avian outbreaks.

The following is a general overview of roles/responsibilities that has been developed based on the B.C. outbreak and is subject to modification pending further national-level discussions.

- ***Canadian Food Inspection Agency (CFIA)*** - routine, ongoing avian/animal surveillance for influenza, lead for the control of the avian/animal aspects of an outbreak (i.e., recommendations for culling, control zones etc.), implementation of public health and enhanced surveillance recommendations and occupational health and safety guidelines for CFIA workers
- ***Workplace Health and Public Safety Programme*** - occupational health issues relating to federal employees involved in the outbreak response e.g. CFIA workers
- ***Centre for Infectious Disease Prevention and Control, The Public Health Agency of Canada*** -international reporting of the Canadian situation and international consultation, convening of expert committees to provide advice, human resources to support outbreak response if necessary, liaison with the involved P/T to ensure that technical advice provided to CFIA and WPHSP is consistent with recommendations being provided by the P/T and local public health authority
- ***National Microbiology Laboratory*** – consultation with CIDPC and P/T public health authorities regarding recommendations for the collection, transportation and reporting of laboratory specimens and tests, consultation with P/T laboratories to facilitate appropriate and timely outbreak specimen management, laboratory testing including virus isolation and characterization

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<sup>6</sup> The current draft of the Respiratory Illness Outbreak Response Protocol (RIORP) (7) includes roles and responsibilities for the various levels of government, general principles and operating procedures agreed to by federal, provincial and territorial agencies in order to help coordinate the investigation and control of severe respiratory illness outbreaks in Canada. Coordination with animal health authorities is not currently specifically addressed in this draft document.

- **National Centre for Foreign Animal Diseases, CFIA** –receiving and testing samples from animals, receive reports re. Avian influenza from provincial/territorial laboratories
- **First Nations and Inuit Health Branch, PHAC** – role will likely be consistent with that identified below for the Provincial/Territorial Public Health Authorities with application to on reserve populations
- **Provincial/Territorial Veterinary Diagnostic Laboratories<sup>7</sup>** - receiving and testing samples from animals
- **Provincial/Territorial Public Health Authority involved in outbreak** - tailoring of national recommendations to suit the local situation/epidemiology, developing additional public health recommendations as needed based on the local situation/epidemiology, liaison with The Public Health Agency of Canada and CFIA to ensure consistency of recommendations being provided to the workers and others involved in the outbreak, reporting summary data on human health issues and prevention/control measures taken to The Public Health Agency of Canada, provision of information to the public and health care providers (particularly those outside of the jurisdiction of the affected local public health authority(s))
- **Provincial/Territorial Public Health Authority NOT involved in outbreak**- monitoring of the outbreak and potential impact on the population in their respective jurisdictions, review and implementation as necessary of actions identified in the Canadian Pandemic Influenza Plan for the pandemic phase and level as determined by the epidemiology of the avian outbreak, potential source of human health resources to support the outbreak response if requested by the affected P/T(s).
- **Local Public Health Authority** - implementation of enhanced surveillance and public health recommendations (possibly including legal requirements) related to human health issues (e.g. surveillance of farm families), occupational health issues pertaining to any of their staff involved in the response, provision of information to local health care providers and public as necessary, reporting data on human health issues and prevention/control measures taken to P/T Public Health Authority
- **Local Physicians or occupational health staff** – reporting of any individuals who may have avian influenza infection to local public health authority

While the reporting of human illness to public health authorities is usually a requirement under provincial/territorial legislation, the reporting of avian or animal illness that may impact human health is not as well defined. These processes are currently being examined at the national level. In the meantime, P/T public health authorities are encouraged to develop working relationships with their animal health counterparts (including occupational health authorities) within their respective jurisdictions in order to facilitate timely two-way communication and management of these types of events. This should include consensus on outbreak management structure, to facilitate an efficient outbreak response.

## 5 Avian/ Animal Surveillance

Routine surveillance for avian/animal influenza is overseen by the Canadian Food Inspection Agency through the Canadian Animal Health Network (CAHNet). CAHNet is a "network of networks", linking animal disease surveillance partners in Canada. Partners include

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<sup>7</sup> Note; the provincial veterinary service in most P/Ts operates a veterinary diagnostic laboratory that is used by veterinary practitioners, and may play a significant role in an outbreak (as was the case in the British Columbia 2004 outbreak of H7N3), both in testing of specimens and liaising with local producers.

representatives from federal, provincial and territorial veterinary services, diagnostic laboratories, veterinary colleges, veterinary practitioners, producer organizations and wildlife interest groups. The objective of CAHNet is to link animal disease surveillance partners in Canada and to track emerging diseases that threaten animal and public health. (9)

In Canada only highly pathogenic avian influenza is federally “reportable” to OIE. Low pathogenic strains of avian influenza may be reported occasionally from provincial veterinary diagnostic laboratories, however reporting of these strains is not a federal requirement. Between 1997 and 2003, the National Centre for Foreign Animal Diseases (NCFAD) in Winnipeg characterized avian influenza viruses based on 19 reports involving turkeys, chickens, ducks, gulls, pelicans, finches, pet birds and imported caged birds. In each incident either the pathogenicity of the virus was not determined or low pathogenicity was determined. Subtypes identified from these 19 reports included: H6N1, H1N1, H10N7, H4N6, H13N6, H3N2, H3N8, and H7N1<sup>8</sup>. (10)

Animal influenza surveillance data has also been collected from swine and equine sources. In Canada, influenza is often endemic in swine. There are very few outbreaks, and therefore few submissions for laboratory testing. Laboratory findings have indicated however, that the predominant subtype is H1N1. In equine specimens the predominant subtype has been H3N8, which tends to cause a mild respiratory infection that is difficult to differentiate clinically from other equine rhinoviruses and herpes viruses.

As previously indicated, as part of pandemic preparedness each P/T should have a working relationship with their respective veterinary counterparts. This will minimize notification delays when avian influenza is detected in their jurisdiction and facilitate prompt implementation of any necessary public health measures for the protection of human health. A list of CAHNet contacts for each P/T is provided in Annex E.

## **6 Human Surveillance**

Upon notification of an avian/animal influenza outbreak with human health implications, public health authorities should initiate an investigation and implement appropriate public health measures. These measures will include primary prevention (e.g., infection control measures and antiviral prophylaxis), in addition to case finding and management activities. Investigations would also entail additional activities surrounding identification, understanding and containing sources of infection. Surveillance activities are critical for characterizing and monitoring the impact of the outbreak on human health, guiding public health actions and for the provision of data necessary for national and international reporting of the event.

### **6.1 General Recommendations**

Surveillance activities should include:

- i. Development of an outbreak case definition that includes details regarding specific symptoms, incubation period, exposures and locations of concern in addition to laboratory test results that are associated with confirmed cases. A general case definition for human cases of avian influenza is provided in section 3.1 above. It is expected that this general definition would be modified by the affected P/T at the time of

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<sup>8</sup> An H3 and H6 were also reported with no N information available.

the outbreak to address the unique characteristics of the outbreak. (A sample of an outbreak case definition for H7 is provided in Annex A and the WHO Case definition for H5 influenza is provided in Annex B)

- ii. Dissemination of the outbreak case definition to all relevant stakeholders including the public health outbreak investigators, occupational health authorities with employees involved in controlling the outbreak (e.g. CFIA), the pandemic influenza committee (i.e., all other P/Ts and surveillance working group members including VPRIS) and other stakeholders that might be involved in case detection (e.g. local physicians or hospitals).
- iii. Development and dissemination of an initial outbreak reporting questionnaire to public health outbreak investigators. The form used in the 2004 BC outbreak is provided in Annex F and a generic version of this form is in Annex G.
- iv. Consideration of database and reporting tools that will be used to store and summarize the collected data as well as assist with case/ information management.
- v. Identification of potential cases and contacts (see definitions in section 3 above) and administration of the outbreak-reporting questionnaire in order to collect epidemiological information and implement the appropriate investigation and public health measures. This will involve communicating with a designated person(s) at the affected farm(s) and enquiring about any farmers, families, employees, crews, visitors or others who may have had contact with avian influenza infected/contaminated or potentially infected/contaminated poultry, people or material on the farm. Through this process, the number of ill persons (potential cases) and potentially exposed persons (contacts) can be identified and follow-up initiated. Further follow-up and communication will then be required for all individuals identified as potential cases and the contacts. This process can also be used to ensure that educational materials, including public health recommendations, (see Public Health Measures below) have been received and that any questions are addressed.
- vi. Ongoing surveillance for human illness linked to affected farms (see details in section 6.2 below on surveillance of contacts of an avian source of virus)
- vii. Ongoing timely reporting on any human cases and control measures put in place, through the normal reporting channels (i.e., local public health to P/T authority to The Public Health Agency of Canada). As this information will dictate which pandemic phase the country is in, it will also be shared with the Pandemic Influenza Committee and the World Health Organization.
- viii. Notification<sup>9</sup> of any P/Ts that would be receiving ill individuals linked to the outbreak (e.g. workers who have come to assist in culling activities and who are now symptomatic and returning to their home P/T) by the affected P/T public health authority<sup>10</sup>.

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<sup>9</sup> This notification should occur directly between P/Ts to avoid delays and should include (as permitted by P/T legislation) the individual's name and contact information as well as the status of the individual with respect to their clinical illness and any required ongoing treatment and monitoring.

<sup>10</sup> Similarly if contacts are being actively managed (e.g. daily active surveillance) as part of the outbreak response, these individuals should also be notified to their respective jurisdiction if the monitoring period has not been completed by the time the individual is leaving the outbreak jurisdiction.

- ix. Notification of asymptomatic individuals linked to the outbreak that are leaving the affected P/T that they should be aware of the possibility of symptom development up to 7 days after last exposure. Should symptoms develop, they should be instructed to both see a physician and report their symptoms and link to the outbreak to a local public health authority. (Note: These individuals may also be provided with contact information for public health individuals in the affected P/T and asked to contact them in order to facilitate further follow-up). This (symptomatic) person would likely be asked to restrict their activities as a precaution until a diagnosis can be made.
- x. An assessment for evidence of human influenza strains currently circulating in or near the affected area(s).
- xi. Consideration of any special studies (e.g., laboratory testing for evidence of asymptomatic infection) that might require data or laboratory specimen collection during or following the outbreak.

Jurisdictions not involved in the outbreak should ensure that the identification of any individuals with compatible illness within their jurisdiction and with a link to the outbreak, are notified to the P/T public health authorities in the P/T with the outbreak. These individuals should be managed as per the recommendations in this document for management of cases.

## **6.2 Exposure Assessment**

In order to classify individuals as contacts of an avian source of virus, it will be necessary to define a significant exposure based on a risk assessment. The risk assessment should include consideration of the likelihood that the virus is circulating at a particular location (e.g. this is most certain if laboratory confirmation has been obtained in a flock) as well as the nature of the human and bird/animal interactions (e.g., whether or not the live birds needed to be caught and restrained during a cull) and the physical environment (e.g., the presence of large exhaust fans blowing air out of a barn). These assessments should ideally be conducted in consultation with a veterinary epidemiologist/disease control specialist, who can provide insight into differences between potential risk settings and the effectiveness of possible mitigating measures.

There is relatively limited public health experience with avian influenza outbreaks and variability has been observed in the epidemiology of avian influenza outbreaks caused by different strains. Therefore, it may be necessary to modify the list of sources of avian influenza virus as the outbreak progresses, more information becomes available, or the situation changes (e.g. if there is evidence of airborne spread of the virus from an avian source).

Initially, it is expected that those most likely to be exposed would include external employees (e.g. CFIA workers) who are involved in outbreak control, culling of infected flocks or euthanasia of birds, disposal of carcasses and cleaning of involved premises in addition to persons living and working on affected farms who have such contact.

If human illness is observed, the exposure history of these individuals should be documented and used to evaluate implemented infection control precautions. Close contacts of these cases should be managed as described below (section 7.2). If human-to-human transmission is suspected, then a complete exposure assessment should be conducted. This assessment will inform the risk assessment of other settings where cases are residing.

## **7 Public Health Measures**

Public health measures will largely depend on the initial findings from the epidemiologic assessment of the outbreak. Initially the focus should be on education as this will be key to facilitating the compliance with other public health actions. Once human illness due to the avian virus is detected, additional measures will be necessary.

### **7.1 General Recommendations**

Public health measures should include:

- i. The provision of information on avian influenza, which highlights why it is a potential human health issue and appropriate infection control measures. A sample “Dear Farmer letter” is provided in Annex H. Also see section 8 for Infection Control recommendations.
- ii. Activities to ensure the local availability of antiviral drugs (see section 9). This may include overseeing delivery from a central supplier to the appropriate location(s) for distribution and establishment of a centralized prescription and dispensing clinic.
- iii. Provision of the current human influenza vaccine for the purposes identified in section 9.
- iv. Investigation and management of ill individuals/cases (see recommendations below)
- v. Investigation and management of potential or known contacts (see recommendations below)
- vi. Confirmation of roles and responsibilities with respect to the provision/delivery of occupational health services.

### **7.2 Management of Contacts**

In order to target recommendations for contacts of an avian source or human source of avian influenza virus, it is important to consider the epidemiology of the outbreak. Factors that would likely influence recommendations for contacts include:

- Pathogenicity of the avian virus
- History of human illness caused by the specific type of avian influenza virus
- Observation of human illness linked to the current outbreak and severity of illness
- Timing of implementation of control measures
- Individual risk factors in the exposed person (e.g. immunocompromising conditions)
- Degree of certainty that the flock has been infected with the avian virus
- Confidence that public health recommendations (e.g., for personal protective equipment, immunization, antiviral prophylaxis) are being or will be followed
- Number of cases/contacts (e.g., as numbers increase may advise self monitoring/quarantine rather than public health or health care system involvement)

As contacts are identified through the surveillance activities in the outbreak investigation, it is essential that these individuals receive<sup>11</sup> clear recommendations from public health. A sample information letter for contacts of an avian source of virus is provided in Annex I and a letter for physicians that may be seeing these individuals is provided in Annex J.

Recommendations should be provided in a format that is appropriate for the reading/educational level and language of the intended recipients (e.g. modifications and translation may be necessary for foreign workers employed on the farm). It is recommended that these individuals:

- be instructed to self-monitor for the development of fever, respiratory symptoms, and/or conjunctivitis (eye infection) for 1 week after the last exposure to a known or suspected source of avian influenza virus<sup>12</sup>
- be evaluated for antiviral prophylaxis as indicated in section 8 below
- be immunized with the current human influenza vaccine if they have not received it already (see section 9)
- strictly adhere to all infection control precautions described in section 7 below

Potentially exposed children (i.e., child contacts) should be monitored by an adult who has received information on what symptoms to look for and how to take a temperature, should fever be suspected.

Monitoring by the health unit may be more active depending on:

- 1) the epidemiology of the outbreak (e.g., if the avian virus is highly pathogenic or is currently or previously known to cause severe illness in humans),
- 2) if there was a significant delay in the implementation of control measures,
- 3) familiarity with the strain causing the outbreak, and
- 4) level of confidence that public health recommendations are being followed.

More active monitoring might include phone inquiries from public health staff and/or requests for daily temperature recording (i.e., especially if fever has been identified as an early symptom). Restriction of movement of contacts would initially involve recommendations not to visit other farms or unaffected locations, to avoid serving as a vehicle for the spread of contaminated materials (see infection control recommendations in section 8.1). However, 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 person to person.

The recommendations in this document are intended for outbreak control. If the outbreak in humans progresses to the point where there is human to human transmission and pandemic potential is considered to be significant, due to the scope of the outbreak and or failure of implemented control measures, the management strategy should shift to focus on the recommendations corresponding to pandemic phase 0, level 3 (P0L3) in the Canadian Pandemic Plan. Recommendations on quarantine and other public health measures would need to be developed at that time based on available data including observed incubation period.

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<sup>11</sup> Contacting of individuals exposed to an avian source of virus, may be indirect through staff supervisors or occupational health authorities. The necessity of individual contact should be determined by the local public health authority depending on the epidemiology of the outbreak and efficient human resource allocation.

<sup>12</sup> List of possible sources can be found in the Terminology section of this document (section 3)

### **7.3 Management of Cases**

Upon receipt of a report of an ill person, it is recommended that the public health authority:

- contacts the ill person and completes a case report form (classifying them as a suspect or confirmed case for surveillance purposes)
- facilitates collection of appropriate laboratory specimens (see Annex C)
- facilitates access to early antiviral treatment
- reports the person under investigation/ probable case/ confirmed case as per previously established protocol
- provides information to the ill individual (and/or their family members) about their illness and who to call and where to go if their illness becomes more severe
- instructs the ill individual to self-isolate<sup>13</sup> for 24 hours after symptom resolution
- provides information on infection control measures (i.e., respiratory and hand hygiene etc.)
- conducts active surveillance<sup>14</sup> and documents course of illness
- Identifies any close contacts

Note: Employees should notify their health and safety representative of their illness and these activities should be conducted in collaboration with the respective occupational health services.

If the illness requires hospitalization, then the infection control measures should include droplet and airborne precautions as recommended in Section 8.1 (bullet iv) below. The need for public health follow-up upon discharge from hospital will depend on whether the illness has completely resolved at discharge and potentially other individual risk factors that may influence the period of communicability.

## **8 Infection Control**

The following recommendations have been developed by the Nosocomial and Infection Control Section of the Population and Public Health Branch and the Workplace Health and Safety Programme, Public Health Agency of Canada, for application to avian outbreak situations.

Strict adherence to infection control precautions will be essential for the control of the avian influenza outbreak and possibly prevention of human infection. This information should be conveyed to all workers, residents and visitors to affected farms as soon as possible at the first identification of the outbreak. It is important that these messages be consistent regardless of the source, that is, whether public health or occupational health authorities are involved in developing and distributing educational materials. Measures to monitor compliance should also be considered.

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<sup>13</sup> With the exception of visiting a health care provider, individuals recommended to be on self-isolation should stay home for 24 hours after symptom resolution and avoid close contact with unexposed household members, unless an alternative diagnosis is established.

<sup>14</sup> Frequency of active surveillance should be determined by the public health authority with consideration given to reasonable resource allocation and severity of the illness (especially if the outbreak is large).

## 8.1 General Recommendations/Precautions

- i. Farm workers or owners who are not directly involved in culling activities should avoid exposure to known or potential sources of avian influenza virus (e.g. infected birds, bird manure or potentially avian influenza-contaminated environmental surfaces)
- ii. Other individuals residing on the farm (e.g. family members) should also avoid exposure to known or potential sources of avian influenza virus
- iii. Workers involved in culling activities or who are otherwise expected to be exposed to known or potential sources of avian influenza virus, should wear personal protective equipment as indicated in section 8.2 below.
- iv. Due to the potential for avian/animal influenza to cause severe human illness, as observed with H5N1 avian influenza strain in Asia during 2004, and our relatively limited experience with avian/animal influenza infections in humans, more aggressive infection control measures are currently being recommended for management of human cases within the health care setting. Specifically the WHO and the CDC in Atlanta have recommended that “droplet” and “airborne” precautions (e.g., N-95 mask and negative pressure room) be implemented when cases (of any severity) are being cared for in a health care setting. While it is acknowledged that the available evidence indicates that “droplet” precautions are adequate for containment of avian influenza, the addition of airborne precautions are precautionary and based on the assumption that the number of cases of human illness will be relatively low and therefore that implementation of the airborne precautions will be feasible and sustainable for the duration of avian/animal outbreak (e.g., there are sufficient negative pressure rooms in the system to accommodate this approach). The National Infection Control Steering Committee supports the implementation of “droplet” and “airborne” precautions for this specific indication.<sup>15</sup>

Contacts of known or potential sources of avian influenza are advised to take the following precautions.

- Avoid touching their faces and mucous membranes, including their eyes, with their hands (whether they have been wearing gloves or not).
- Wash hands frequently<sup>16</sup> (including before putting on and after removal of personal protective equipment).

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<sup>15</sup> The recommendation for airborne precautions is based on the severity of illness and assumption of low numbers of cases – as opposed to the predominant method of transmission, namely droplet and contact. In the event of an influenza pandemic, the use of airborne precautions will not be sustainable and the recommendations in the current Infection Control Annex of the Canadian Pandemic Influenza Plan, that includes routine practices and additional precautions for droplet and contact transmission, should be followed. These recommendations are based on the currently available evidence and therefore are expected to be both sufficient and feasible.

<sup>16</sup> Hand hygiene is the most important measure in preventing the spread of infection after contact with infected or potentially infected poultry, contact with contaminated surfaces, or after removing gloves. Workers or other persons at risk of exposure should be educated on the importance of strict adherence to and proper use of hand hygiene.

- Hand hygiene should consist of washing with soap and running water for a minimum of 15-20 seconds or the use of alcohol based hand sanitizer if hands are not visibly soiled.

## **8.2 Personal Protective Equipment**

The wearing of personal protective equipment (PPE) is the most critical measure to minimize an individual's risk of infection and is highly recommended to persons who may be exposed to and avian/animal source of avian influenza. Workers involved in the culling of infected poultry and others involved in the outbreak control efforts must strictly adhere to recommended PPE.

This equipment includes:

- Disposable fit-tested half-face N-95 or better respirator<sup>17</sup>.
- Safety goggles (to protect the mucous membranes of eyes)
- Gloves that are impervious (nitrile, PVC, rubber, hospital gloves).
  - They should not be reused or washed. If heavy-duty rubber work gloves are used they should be disinfected after use or discarded.
  - Gloves should be removed immediately after use to avoid touching non-contaminated articles and surfaces.
- Coveralls that are impervious to water.
  - If using reusable protective clothing it must be washed immediately after use. If this is not possible, disposable coveralls should be used.
- Disposable protective shoe/boot covers or rubber or polyurethane boots that are impervious to mud and water and are easily cleaned and disinfected should be worn. (Use of foot baths)
- Disposable head or hair cover to keep hair clean

Disposable PPE must be properly discarded (sealed plastic bags) and reusable or non-disposable PPE should be cleaned and disinfected as specified by public health authorities.

Farm workers, those involved in culling and others who may be exposed to infected poultry should be trained in proper techniques of donning, removing and disposing of PPE without contaminating him/herself. Hand hygiene must be performed after removing PPE. The training should be similar to that provided to health care workers by hospital occupational or infection control programs.

## **9 Antivirals**

The following recommendations have been developed by the National Antivirals working group for application to avian outbreak situations<sup>18</sup>. The Antiviral working group has been involved in the development of antiviral recommendations for pandemic planning purposes.

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<sup>17</sup> Fit testing and training is necessary prior to use of a N-95 or better respirator. This type of respirator is being recommended for these individuals since the process of culling or environmental decontamination (e.g. in affected barns) may cause contaminated materials (e.g. sawdust soiled with manure) to be suspended in the air, creating a risk potentially akin to an aerosol generating procedure in a hospital setting.

<sup>18</sup> It is expected that similar recommendations would be made if the source of the outbreak was pigs/swine as opposed to poultry/avian, however this would need to be re-visited based on the epidemiology of the outbreak.

The use of antiviral drugs during an outbreak of avian influenza is a relatively new indication. It is recommended that national systems be developed to monitor adverse reactions to antiviral use, and to monitor antiviral susceptibility under these circumstances. In addition local procedures should be put into place to maximize compliance with antiviral prophylaxis and to ensure that antiviral treatment can be initiated as soon as possible. (A sample information sheet on Oseltamivir is provided in Annex K). The recommendations for antiviral use should be reviewed and modified as necessary at the time of the outbreak in light of the epidemiology of the specific avian influenza incident/strain. As more information about the epidemiology of avian influenza or the efficacy/safety of antiviral medications becomes available, the recommendations provided in this document may change<sup>19</sup>. Additional information on antiviral drugs for influenza is available in the Antivirals Annex to the Canadian Pandemic Influenza Plan.

### **9.1 Background information**

Neuraminidase inhibitors prevent the replication of both type A and B influenza viruses by inhibiting influenza virus neuraminidase. Neuraminidase promotes the release of virus from infected cells by preventing virions from self-aggregating and binding to the surface of infected cells. The protective efficacy of neuraminidase inhibitors in preventing laboratory confirmed clinical influenza is between 60-90%. The efficacy of neuraminidase inhibitors in preventing avian influenza has not been established.

Oseltamivir is a neuraminidase inhibitor that is licensed in Canada for treatment of influenza A and B in persons 1 year of age and older. It is also licensed for post-exposure prophylaxis against influenza in persons  $\geq$  13 years of age, following close contact with an infected individual (index case), for a duration of up to 14 days. Oseltamivir is contraindicated in children less than one year of age and in persons with known hypersensitivity to any components of the product.

There is evidence for and experience with prophylactic use of oseltamivir for up to 6 weeks, but beyond this time frame experience is limited. Therefore, when developing these recommendations that include off-license uses<sup>20</sup>, a risk benefit approach was taken examining the individual risk to the worker, the risk to public health, and the risk/benefit of the medication.

### **9.2 Antiviral Recommendations**

#### **Prophylaxis:**

- a. Oseltamivir prophylaxis is recommended for persons considered to be potentially exposed to avian influenza through direct contact with infected or suspect birds, manure or contaminated surfaces; or history of being in the same confined air space with the birds or manure. This includes:
  - persons who are involved in outbreak control, culling of infected flocks or euthanasia of birds, disposal of carcasses and cleaning of involved premises
  - persons living and working on affected farms who have such contact.

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<sup>19</sup> A potential role for the use of Amantadine would need to be discussed by the Antivirals working group at the time of the outbreak based on sensitivity testing results etc.

<sup>20</sup> Since Oseltamivir is only licensed for post-exposure prophylaxis, “seasonal” or “pre-exposure” use would be considered an off-license use.

Note: Other persons on the affected farm who do not have a history of this type of contact should be offered early treatment in the event of illness.

- b. Prophylaxis is not recommended for persons who will be involved in the slaughter of poultry that is considered non-infected. This recommendation should be revisited if epidemiological studies suggest they are in fact at risk of disease.
- c. Oseltamivir prophylaxis should continue for the duration of exposure plus an additional five days. The maximum duration of time for continuous prophylactic use of oseltamivir is 6 weeks.
- d. It is recommended that persons who have been on 6 weeks of continuous oseltamivir prophylaxis discontinue use of oseltamivir for a 2-week period prior to re-starting the medication. During this period persons should not work in an exposed environment.
- e. The working group does not support high-risk exposure to avian influenza without oseltamivir prophylaxis.  
**Note:** For persons essential to the response who cannot be rotated off duty (e.g. key veterinarians), consideration may be given to extending oseltamivir prophylaxis beyond 6 weeks on a case-by-case basis after consultation with a physician.
- f. For persons not on continuous prophylaxis, post-exposure prophylaxis (five-day course) is recommended following a significant avian exposure. Post-exposure prophylaxis should not be routinely offered to household and other close contacts of human cases of avian influenza, however it may be considered in severe or unusual cases.

**Treatment:**

- a. Oseltamivir treatment is recommended for persons one year of age and over, who develop compatible illness following avian exposure. For H7 this can include conjunctivitis and/or influenza-like illness (ILI).
- b. In light of evidence showing continuing replication of avian influenza virus beyond 48 hours (ref 2) after onset of symptoms, consideration should be given to treating individuals presenting at any point during their illness (i.e., not just during the first 48 hours).

**Oseltamivir Dosage<sup>21</sup>:**

		Treatment	Prophylaxis <sup>22</sup>
Adults		75 mg bid x 5 days	75 mg daily
Children ( $\geq 1$ year of age)	weight $\leq 15$ kg	30 mg bid x 5 days	30 mg daily
	$> 15-23$ kg	45 mg bid x 5 days	45 mg daily
	$> 23-40$ kg	60 mg bid x 5 days	60 mg daily
	$> 40$ kg	75 mg bid x 5 days	75 mg daily

<sup>21</sup> Dose adjustment may be necessary with renal impairment

<sup>22</sup> For a maximum duration of 6 weeks

## **10 Vaccine Programs**

Contacts of a known or potential source of avian influenza virus who have not received the most recent annual influenza vaccine should be offered this vaccine immediately. Receipt of the vaccine should be mandatory for any workers involved in the control of the avian outbreak and ideally should be administered two weeks prior to the potential exposure.

The current human influenza vaccines do not protect the individual against avian influenza; however, the vaccine can potentially reduce the possibility of dual infection with avian and human influenza viruses. There is a small possibility that dual infection could occur and result in reassortment. The resultant hybrid virus could be more easily transmitted from person to person and therefore have pandemic potential.

## Annex A: Sample H7 Outbreak Case Definitions

The following definitions were developed by the Vaccine Preventable and Respiratory Infections Surveillance Committee and the BC Centre for Disease Control to assist with the identification of human influenza A (H7) cases and infections associated with the current avian influenza A (H7) poultry outbreak in Fraser Valley, British Columbia, which originated in February 2004. It's expected that these definitions, which are current as of April 22, 2004, will need to be updated as more information is obtained on the laboratory methods from the National Microbiology Laboratory (NML) and Canadian Public Health Laboratory Network (CPHLN) or should the clinical presentation in humans change.

### Suspect Case

An individual presenting on or after February 6, 2004 with onset of two or more of conjunctivitis\* and/or influenza-like illness (ILI) symptoms\*\* occurring between 1 day after first exposure/ contact and 7 days after last exposure/ contact, inclusive, to a potential source of avian influenza virus\*\*\* in the Fraser Valley area, British Columbia. Symptoms should not be fully attributable to another known etiology.

\*Conjunctivitis Symptoms:

- red eye, eyelid/ conjunctiva inflammation (swelling), tearful eye, itching eye, painful eye, burning eye, discharge from eye, or sensitivity to light.

\*\*ILI Symptoms:

- fever (if measured, greater than 38C), cough, rhinorrhea, sore throat, myalgia/arthralgia, or headache

\*\*\*Potential source of avian influenza can be:

- infected or potentially infected poultry
- infected or potentially infected raw or under-cooked poultry products
- infected poultry manure
- contaminated surfaces
- contaminated vehicles, equipment, clothing and footwear at involved sites
- contaminated air space
- other infected or potentially infected animals (e.g., wild fowl, swine, etc.)
- individuals known to be infected

### Confirmed Case

An individual who fulfills the criteria of a suspect case and has laboratory confirmation of influenza A (H7) virus in any specimen(s) from the eye (conjunctival swab), respiratory tract (nasal or nasopharyngeal swab or nasal wash) and/or serology by at least one of the following:

- 1) Virus isolation in cell culture
- 2) RT-PCR (confirmed by another RT-PCR test on a second specimen sample)
- 3) Evidence of sero-conversion from acute and convalescent sera, taken at a 2 week interval, with a four-fold rise in antibody titre.

### **Asymptomatic or Atypical Infection:**

An individual who either has no clinical symptoms or has a clinical presentation unique from that of a suspect case yet has laboratory confirmation (i.e. as detailed above for a confirmed case) of an infection with influenza A (H7).

### **Notes:**

- Swab or nasal wash samples not to be taken immediately after exposure (> 12 hours recommended).
- When only convalescent sera is available, control sera can be used as a baseline to assess titre rise. Details on testing are to follow from the National Microbiology Laboratory (NML).
- Due to its higher reported sensitivity, microneutralization techniques are recommended relative to HI techniques. Specifics on use of microneutralization testing are to follow from the NML.
- Primary Case/Infection: Direct contact with infected or potentially infected poultry, material or poultry products.
- Secondary Case/Infection: Direct contact with an individual who is identified as a confirmed case, a suspect primary case or an asymptomatic/ atypical infection.

## **Annex B: WHO Case Definitions for Influenza A/H5**

*Reference: Influenza A (H5N1): WHO Interim Infection Control Guidelines for Health Care Facilities. March 10, 2004 (from WHO website:  
[http://www.who.int/csr/disease/avian\\_influenza/guidelines/en/](http://www.who.int/csr/disease/avian_influenza/guidelines/en/))*

### **Confirmed case definition for influenza A/H5**

A confirmed case of influenza A/H5 infection is an individual with an acute respiratory febrile illness for whom laboratory testing demonstrates one or more of the following:

- Positive viral culture for influenza A/H5;
- Positive polymerase chain reaction (PCR) for influenza A/H5;
- Positive immunofluorescence antibody (IFA) test to H5 antigen using H5 monoclonal antibodies;
- 4-fold rise in H5 specific antibody titre in paired serum samples.

The laboratory tests for the diagnosis of influenza A/H5 infection included in the case definition are considered the standard for the identification of these viruses.

## Annex C: Laboratory Testing Recommendations

### ***Recommendations from the Vaccine Preventable and Respiratory Infections Surveillance Committee (VPRIS<sup>23</sup>):***

1. Persons with a history of exposure to infected poultry or potentially infected poultry who develop a fever, conjunctivitis or respiratory symptoms should have a respiratory sample (e.g., nasopharyngeal swab or aspirate) collected and forwarded to the provincial laboratory.
2. Conjunctival swabs in addition to NP (nasopharyngeal) swabs should be collected on all symptomatic individuals even if eye-related symptoms are absent at the time of presentation.<sup>24</sup>
3. Swab or nasal wash samples should not be taken immediately after exposure. Waiting at least 12 hours is recommended.
4. Optimally, an acute- (within 1 week of illness onset) and convalescent-phase (after 3 weeks of illness onset) serum sample should be collected and stored locally in case testing for antibody to the avian influenza virus should be needed.
5. When only convalescent sera is available, control sera can be used as a baseline to assess titre rise. Details on testing are available from the National Microbiology Laboratory (NML).
6. Due to its higher reported sensitivity, microneutralization techniques are recommended relative to HI techniques. Specifics on use of microneutralization testing are available from the NML.

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<sup>23</sup> VPRIS includes representatives from the National Microbiology Laboratory and the Canadian Public Health Laboratory Network.

<sup>24</sup> During the outbreak in the Netherlands it was found that conjunctival swabs, even from individuals with no eye-related symptoms, had a superior yield of H7 viruses and therefore were an important specimen to collect for virus isolation.

## Annex D: Example of Lead Agency Responsibilities – BC Outbreak

Type of Person Potentially Exposed	Designated Lead Agency:		
	Enhanced Surveillance Recommendations	Public Health Recommendations	Clinical Occupational Health
<b>Infected Farms Identified for Special Culling</b>			
1. <b>Farmer/producer &amp; farm employees</b> report unusual illness on farm	LPHA	LPHA	WCB
2. <b>Feeding crews</b> may be visiting farm to provide feed for poultry during process	LPHA	LPHA	WCB
3. <b>Veterinarian</b> visits farm and <b>CFIA hired crew</b> collect swabs from ill or dead birds	CFIA	CFIA	WPHSP
4. <b>Laboratory workers</b> do PCR testing on poultry swabs sent to CFIA Winnipeg laboratory	CFIA	CFIA	WPHSP
5. <b>CFIA hired crew</b> prepare barn for culling	CFIA	CFIA	WPHSP
6. <b>CO2 technicians</b> deliver CO2 to the farm	LPHA	LPHA	WCB
7. <b>CFIA hired crew</b> administer CO2 gas to the barn	CFIA	CFIA	WPHSP
8. <b>“Sniffer” crews</b> ensure CO2 gas has dissipated next day	LPHA	LPHA	WCB
9. <b>CFIA hired crew load</b> bird carcasses into biosafety containers and onto trucks, perform on farm composting of carcasses and monitor sites.	CFIA	CFIA	WPHSP
10. <b>Truckers</b> transport carcasses (still contained in biosafety units) to incinerator	LPHA	LPHA	WCB
11. <b>Incineration workers</b> (note: containers still sealed) unload biosafety containers at incineration site & incinerate	LPHA	LPHA	WCB
12. <b>CFIA hired crew</b> dispose of manure in the barns	CFIA	CFIA	WPHSP
13. <b>CFIA hired crew</b> clean and disinfect barns	CFIA	CFIA	WPHSP
<b>Non-Infected Farms Identified for Regular Slaughter</b>			
1. <b>Farmer/producer &amp; farm employees or families</b> caring for birds on farm.	LPHA	LPHA	WCB
2. <b>Feeding crews</b> visiting farm to provide feed for poultry.	LPHA	LPHA	WCB
3. <b>Crews changing poultry bedding</b> in barns.	LPHA	LPHA	WCB
4. <b>CFIA crews</b> collecting birds for testing.	CFIA	CFIA	WPHSP
5. <b>Veterinarian</b> taking swabs for testing.	CFIA	CFIA	WPHSP
6. <b>Laboratory technicians</b> doing PCR testing.	CFIA	CFIA	WPHSP
7. <b>Catching crews</b> helping to move birds from one farm to another or one barn to another.	LPHA	LPHA	WCB
8. <b>Catching crews</b> loading poultry onto trucks for transport.	LPHA	LPHA	WCB
9. <b>Truck drivers</b> transporting poultry to slaughter facility.	LPHA	LPHA	WCB
10. <b>Slaughterhouse/processing plant employees.</b>	LPHA	LPHA	WCB
11. <b>Pre-slaughter inspectors</b> at slaughter facility	CFIA	CFIA	WPHSP
12. <b>Crew disposing of manure</b> in barns	LPHA	LPHA	WCB
13. <b>Crew cleaning barns</b>	LPHA	LPHA	WCB

**Acronyms:** LPHA= Local Public Health Authority; CFIA=Canadian Food Inspection Agency; WCB=Workers’ Compensation Board; WPHSP=Work Place Health and Safety Program

**NOTE:** P/T Public Health Authority provides technical support to Local Public Health Authority (LPHA)

**NOTE:** The Public Health Agency of Canada provides technical support to Canadian Food Inspection Agency (CFIA).

## Annex E: Canadian Animal Health Network Contacts for Animal Influenza Surveillance

Prov/Terr	Name	Phone	Email
AB	Dr Gerald Ollis	780-427-6406	gerald.ollis@agric.gov.ab.ca
BC	Dr Ron Lewis	604-556-3038	ron.lewis@gems3.gov.bc.ca
MB	Dr Allan Preston	204-945-7650	apreston@gov.mb.ca
NB	Dr Jim Goltz	506-453-5488	jpgoltz@gov.nb.ca
NF	Dr Hugh Whitney	709-729-6879	hughwhitney@mail.gov.nf.ca
NS	Dr Gord Finley, or Dr Lyn Ferns	902-893-3491 902-893-6526	finleygg@gov.ns.ca fernsl@gov.ns.ca
NT	Dr Brett Elkin	867-873-7761	brett_elkin@gov.nt.ca
NU	Dr Heather Priest	867-979-6962	hpriest@nunanet.com
ON	Dr David Alves	519-846-0965	david.alves@omafra.gov.on.ca
PE	Dr Liz Spangler	902-566-0848	spangler@upei.ca
QC	Dr Michel Major	418-646-5759	michel.major@agr.gouv.qc.ca
SK	Dr Rob Kerr	306-787-5547	rkerr@agr.gov.sk.ca
YK	Dr Michelle Oakley	867-634-2435	michelle.oakley@gov.yk.ca
CCWHC (wildlife)	Dr Ted Leighton	306-966-7281	ted.leighton@usask.ca
NCFAD (Winnipeg)	Dr John Pasick	204-789-2013	jpasick@inspection.gc.ca
CAHNet	Dr Wayne Lees	204-855-3000	wlees@inspection.gc.ca

## **Annex F: BC Outbreak Reporting Questionnaire - April 2004**

The questionnaire that follows was developed by the BC Centre for Disease Control (BCCDC) for use during the 2004 avian influenza H7N3 outbreak in British Columbia with input from scientists who were previously involved in the response to an avian influenza H7N7 outbreak in the Netherlands in 2003. A generic version of this questionnaire is presented in Annex G.



### Avian Influenza in British Columbia Initial Report Surveillance Form, 2004

**When completed, please fax to the attention of: Dr. Danuta Skowronski, BCCDC, 604-660-0197**

**SUGGESTED OPENING SCRIPT:**

Hello. My name is: \_\_\_\_\_. I am a public health nurse from \_\_\_\_\_ (health unit).

As part of our duties under the Health Act, we are following-up with people who may have been exposed to avian influenza, otherwise known as "bird flu". The avian influenza virus causing outbreaks in poultry in British Columbia may have caused some illness in people who have had contact with infected birds. This form of influenza virus has never before been known to cause illness in humans.

For this reason, it is very important that we collect detailed information about this outbreak and any possible illness in people. All identifying information that is collected will be kept private and confidential and shared only with public health officials who need to know in order to understand and contain this outbreak. Depending on the information we collect, this may take up to 20 minutes. Are you ready to begin? **If no**, when would be a better time? \_\_\_\_\_

**[If interview not proceeding well]** Is there someone else that I should speak to instead in your home (or farm etc) related to this outbreak? If so, who? \_\_\_\_\_ (name/contact information)

**Please use back of page for additional notes, including commentary on relevant details & dates (e.g., direct exposures, incidents, personal protection equipment, etc.).**

**Section I. HEALTH AUTHORITY INFORMATION**

Is this a  NEW report or an  UPDATE?      Date of report (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_\_  
PHN/Person Reporting: \_\_\_\_\_      Health Unit Reporting: \_\_\_\_\_  
Phone: \_\_\_\_\_      Province Reporting: \_\_\_\_\_

**Section II. PERSONAL INFORMATION**

Assigned ID: \_\_\_\_/\_\_\_\_/\_\_\_\_ (Initial of last name, Initial of first name, age in years)  
**[NOTE: All symptomatic workers from outside of BC will be reported to the applicable provincial epidemiologist by the BC Centre for Disease Control & vice-versa]**  
Last name: \_\_\_\_\_      First name: \_\_\_\_\_  
Home Address: \_\_\_\_\_      Home City: \_\_\_\_\_  
Province of Residence: \_\_\_\_\_      Postal Code: \_\_\_\_\_  
Phone Numbers in Province of Residence: \_\_\_\_\_ (home, office &/or, cell)  
Address while in BC if different from above: \_\_\_\_\_  
Phone Number(s) while in BC if different from above: \_\_\_\_\_  
Planned date of return to Province of Residence (if applicable): (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_\_  
What is your occupation? \_\_\_\_\_      Employer: \_\_\_\_\_  
**Public health please indicate appropriate relationship based on occupation/employer:**  
Relationship to Farm:     Farm owner                       Family member of owner                       Farm employee  
                                  CFIA worker                       Other (specify): \_\_\_\_\_  
Date of Birth (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_ or Age: \_\_\_\_yrs      Gender:  Male     Female     Unknown

### Section III. SYMPTOMS

1. Have any of the following eye symptoms started or become worse than usual since February 06, 2004? (*Tick all that apply. Please record only NEW or WORSE symptoms*)

- |                      |                                  |                                    |                |                                  |                                    |
|----------------------|----------------------------------|------------------------------------|----------------|----------------------------------|------------------------------------|
| Red eye(s)           | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Tearful eye(s) | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Burning eye(s)       | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Painful eye(s) | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Itching eye(s)       | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Pus in eye(s)  | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Sensitivity to light | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |                |                                  |                                    |

**If yes**, what day did the first of these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

**If yes**, how would you rate these symptoms?  Mild  Moderate  Severe  Unknown

**If yes**, did these symptoms start suddenly or gradually?  Suddenly  Gradually  Unknown

2. Have any of the following influenza-like symptoms started or become worse than usual since February 06, 2004? (*Tick all that apply. Please record only NEW or WORSE symptoms*)

- |  |                                   |                                       |
|--|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Fever → Temperature _____ | <input type="checkbox"/> Cough    | <input type="checkbox"/> Runny Nose   |
| <input type="checkbox"/> Sore Throat               | <input type="checkbox"/> Headache | <input type="checkbox"/> Muscle Aches |
| <input type="checkbox"/> Fatigue                   | <input type="checkbox"/> Diarrhea | <input type="checkbox"/> Joint Aches  |
| <input type="checkbox"/> Chills                    | <input type="checkbox"/> Sweats   |                                       |

**If yes**, what day did these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

**If yes**, how would you rate these symptoms?  Mild  Moderate  Severe  Unknown

**If yes**, did these symptoms start suddenly or gradually?  Suddenly  Gradually  Unknown

3. Did you have any other symptoms that started or became worse than usual since February 06 2004 that you think may have resulted from contact with poultry?  Yes  No  Unknown

**If yes**, please describe your symptoms:

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**If yes**, what day did these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

*If respondent reports any of the symptoms mentioned above, please make arrangements to collect serum, eye swabs and nasopharyngeal swabs for laboratory testing.*

### Section IV. CONTACTS

- How many people live in the same house as you (not including yourself)? \_\_\_\_\_
- Besides other people living in your household, with how many people do you have close personal contact? This may include family members, intimate partners, etc. \_\_\_\_\_
- Have any of your household members or other personal close contacts told you that they have had any of the symptoms I mentioned earlier?  Yes  No  Unknown
- If yes**, what is/are their name(s), what symptoms did they experience, and how may we contact them?

Name	Relationship	Symptoms	Onset (dd/mm/yyyy)	Contact Number
			/ /	
			/ /	
			/ /	
			/ /	

**For public health completion:** Are these ill contacts potential products of person-to-person transmission?

- Yes  No  Unknown Please explain (yes or no): \_\_\_\_\_

**If the respondent did not have any symptoms please continue with Section VII, « Other People Exposed » on page 5.**

**Section V. CLINICAL INFORMATION**

1. Did you see a physician for your symptoms?  Yes  No  Unknown  
**If yes**, was the physician a (tick all that apply):  General Practitioner or a  Specialist  
**If yes**, what was the diagnosis? \_\_\_\_\_

**Physician Name**

**Physician Address/Phone Number**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Did you go to an Emergency Room for these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_\_

3. Were you hospitalized overnight for these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_\_

4. Did you have a chest X-ray taken because of these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_\_

**If yes**, what was the result: \_\_\_\_\_

5. How are you feeling today?  The Same  Better  Worse  Completely Recovered  
**If recovered**, what was the first day that you no longer had any symptoms? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_\_

6. Have you received influenza vaccination since September 2003?  Yes  No  Unknown  
**If yes**, date? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_\_

**If yes**, why?

- |   |  |
|---|--|
| <input type="checkbox"/> Age over 65                              | <input type="checkbox"/> Lung disease (e.g. asthma, emphysema, COPD)     |
| <input type="checkbox"/> Diabetes                                 | <input type="checkbox"/> Immune deficiency                               |
| <input type="checkbox"/> At my own request                        | <input type="checkbox"/> Because of avian influenza (after Feb 06, 2004) |
| <input type="checkbox"/> Offered through work before Feb 06, 2004 | <input type="checkbox"/> Other (specify) _____                           |

7. Have you taken anti-viral medications (e.g. Tamiflu or Amantadine) since February 06, 2004?

- |  |                                  |
|--|----------------------------------|
| <input type="checkbox"/> Yes, as a treatment for eye/influenza symptoms            | <input type="checkbox"/> No      |
| <input type="checkbox"/> Yes, as a preventative measure due to exposure to poultry | <input type="checkbox"/> Unknown |
| <input type="checkbox"/> Yes, for another reason (specify) _____                   |                                  |

**If yes**, specify name (e.g. Tamiflu or Amantadine): \_\_\_\_\_

**If yes**, how many tablets did you take each day? \_\_\_\_\_

Start date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_ Stop date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_

8. Are you currently a smoker?  Yes  No **If yes**, how many packs do you smoke each day? \_\_\_\_\_  
For how many years have you smoked? \_\_\_\_\_

## Section VI. EXPOSURE INFORMATION

1. Since February 6, 2004 have you had contact with poultry, poultry products, or poultry manure?  
 Yes    No    Unknown   **If yes**, When was your first contact/exposure? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_  
 When was your last contact/exposure? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_
2. Do any of these statements apply to you (tick **all** that apply)?
- |  |                              |                             |                                  |
|--|------------------------------|-----------------------------|----------------------------------|
| a) I own a poultry farm  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| b) I live on a poultry farm                                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| c) I am a family member or household contact of a poultry farmer | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| d) I am employed by a poultry farm                               | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| e) I am a veterinarian   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| f) I have been helping cull poultry                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| g) I have been transporting poultry carcasses                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| h) I have been working at an incinerator                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| i) Other (please specify): _____                                 |                              |                             |                                  |
3. What poultry farm(s) have you visited or worked on since Feb 6, 2004? Were these infected with avian influenza? *(Last 4 columns to be completed by public health staff with information from CFIA.)*
- | Name of Farm | Farm Location | Infected?  | Date Positive<br><small>(dd/mm/yyyy)</small> | Date Culled<br><small>(dd/mm/yyyy)</small> | Date Clean<br><small>(dd/mm/yyyy)</small> |
|--------------|---------------|--|--|--|---|
| _____        | _____         | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |  |   |
| _____        | _____         | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |  |   |
| _____        | _____         | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |  |   |
4. Have you participated in any of the following activities *(Please tick all that apply)*?
- |   |                              |                             |                                  |
|---|------------------------------|-----------------------------|----------------------------------|
| a) I have not been directly involved with poultry                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| b) I worked at an incinerator   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| c) I worked in a slaughter house  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| d) I brought equipment to farms (e.g. equipment to gas flocks)                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| e) I worked with carbon dioxide gas to euthanize the birds                          | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| f) I collected eggs   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| g) I was in direct contact with surfaces that may have been contaminated by poultry | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| h) I was in direct contact with manure from the poultry                             | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| i) I shared a confined air space with infected or potentially infected poultry      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| j) I assessed the health of poultry   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| k) I caught live poultry  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| l) I had other contact with live poultry (specify) _____                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| m) I collected dead poultry   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| n) I had other contact with dead poultry (specify) _____                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| o) I loaded / unloaded poultry carcasses into / out of trucks                       | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| p) Other (please specify): _____  |                              |                             |                                  |
5. Do you wash your hands after such exposure/activities?    Yes    No    Unknown  
 If yes, is this:    Always    Usually    Sometimes    Rarely
6. **If you have been exposed to potentially infected poultry**, were you wearing any of the following during your exposure? (tick all that apply)
- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> Gloves                                      | <input type="checkbox"/> Mask (Type _____)  | <input type="checkbox"/> Goggles             | <input type="checkbox"/> Safety glasses |
| <input type="checkbox"/> Impermeable Coveralls                       | <input type="checkbox"/> Disposable shoes or shoe covers                                  | <input type="checkbox"/> Head and hair cover |   |
| <input type="checkbox"/> Disposable Outer garments                   | <input type="checkbox"/> Boots that you clean and disinfect after exposure and wear again |  |   |
| <input type="checkbox"/> Outer garments that you wash and wear again |   |  |   |

**Section VI. EXPOSURE INFORMATION cont.**

7. Can you remember any concerning incidents in terms of exposure? Please describe. Please keep in mind that all of this information will be kept confidential (use space overleaf if necessary).

\_\_\_\_\_

8. Have you had close contact with a person who lives/works on a poultry farm and who has/had respiratory or eye symptoms?  Yes  No  Unknown

*By close contact, we mean family members, roommates, intimate partners, etc.*

**If yes**, who (and relationship to you)? \_\_\_\_\_

**If yes**, date of first exposure (dd/mm/yyyy): \_\_\_/\_\_\_/\_\_\_\_\_ Date of last exposure(dd/mm/yyyy): \_\_\_/\_\_\_/\_\_\_\_\_

**People at increased risk:**

9. Are there any children in your household?  Yes  No  Unknown

10. Are there any elderly people in your household?  Yes  No  Unknown

11. Do you have a heart or lung condition?  Yes  No  Unknown

12. Do you have any other chronic conditions?  Yes  No  Unknown

If yes to any other chronic conditions, specify: \_\_\_\_\_

13. Have you been told that you have a weak immune system?  Yes  No  Unknown

*This could be due to a health condition (e.g. cancer, HIV) or medications that you may be taking.*

If yes to a weak immune system, specify: \_\_\_\_\_

14. Do you have a chronic eye condition?  Yes  No  Unknown

If yes to a chronic eye condition, specify: \_\_\_\_\_

15. Do you have any allergies?  Yes  No  Unknown

If yes, to any allergies:  Food  Dust, dander, pollen  Medication  Other, sp: \_\_\_\_\_

***If any elderly people, children or persons with weak immune systems or chronic conditions are in the household, these persons should be strongly encouraged to avoid any contact with poultry that may be infected.***

**Section VII. OTHER PEOPLE EXPOSED**

**If exposed at a farm:** Have any other people had close contact with infected birds at the same farm as yourself (direct handling of birds or manure or shared the same confined airspace as infected birds)?

Yes  No  Unknown; If yes, how many people? \_\_\_\_\_

**If yes**, what are their names? What symptoms did they experience? What are their phone numbers?

Name	Symptoms (specify, or indicate none or unknown)	Contact Number
------	---	----------------


Thank you very much for taking the time to answer our questions. This is the first time this form of avian influenza virus has caused illness in people. There may be other questions we need to ask you as part of our public health follow-up and if so we may call you back. You are also free to call us anytime if you have any questions at: \_\_\_\_\_.

**Finally**, if special studies are set up in the future to understand avian influenza viruses, would you be interested in hearing about these?  Yes  No

**NOTE TO INTERVIEWER:** Conclude with relevant public health recommendations and offer to send “Dear Poultry Farmer” letter or other information if appropriate and not already received.

## **Annex G: Generic Outbreak Reporting Questionnaire**

This generic version has been adapted by the Vaccine Preventable and Respiratory Infections Surveillance Committee (VPRIS) from the BCCDC questionnaire. Items specific to the outbreak in British Columbia have been removed. Fields where specific information has to be filled in have been identified (with “< >” brackets) for the purpose of making this form easy to adapt at the time of an avian outbreak. It is expected that this will be a useful tool for any jurisdiction faced with an avian outbreak in the future.

**Avian Influenza in \_\_\_\_\_ <outbreak province>  
Initial Report - Surveillance Form**

**When completed, please fax to the attention of: \_\_\_\_\_ <Contact person and fax number>**

**SUGGESTED OPENING SCRIPT:**

Hello. My name is: \_\_\_\_\_. I am a public health nurse from \_\_\_\_\_ <health unit>.

As part of our duties under the Health Act, we are following-up with people who may have been exposed to avian influenza, otherwise known as "bird flu". The avian influenza virus causing outbreaks in poultry in \_\_\_\_\_ <outbreak area> may have caused some illness in people who have had contact with infected birds. This form of influenza virus has rarely been known to cause illness in humans.

For this reason, it is very important that we collect detailed information about this outbreak and any possible illness in people. All identifying information that is collected will be kept private and confidential and shared only with public health officials who need to know in order to understand and contain this outbreak. Depending on the information we collect, this may take up to 20 minutes. Are you ready to begin? **If no**, when would be a better time? \_\_\_\_\_

**[If interview not proceeding well]** Is there someone else that I should speak to instead in your home (or farm etc) related to this outbreak? If so, who? \_\_\_\_\_ (name/contact information)

**Please use back of page for additional notes, including commentary on relevant details & dates (e.g., direct exposures, incidents, personal protection equipment, etc.).**

**Section I. HEALTH AUTHORITY INFORMATION**

Is this a  **NEW** report or an  **UPDATE**? Date of report (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_\_  
 PHN/Person Reporting: \_\_\_\_\_ Health Unit Reporting: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Province Reporting: \_\_\_\_\_

**Section II. PERSONAL INFORMATION**

Assigned ID: \_\_\_\_/\_\_\_\_/\_\_\_\_ <Format of ID assignment to be determined prior to use, e.g. Initial of last name, Initial of first name, age in years>

**[NOTE: All symptomatic workers whose home is outside of \_\_\_\_ <outbreak province> will be reported to the applicable home provincial epidemiologist by the \_\_\_\_ <outbreak province> & vice-versa]**

Last name: \_\_\_\_\_ First name: \_\_\_\_\_  
 Home Address: \_\_\_\_\_ Home City: \_\_\_\_\_  
 Province of Residence: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone Numbers in Province of Residence: \_\_\_\_\_ (home, office &/or, cell)

Address while in \_\_\_\_ <outbreak province> if different from above: \_\_\_\_\_

Phone Number(s) while in \_\_\_\_ <outbreak province> if different from above: \_\_\_\_\_

Planned date of return to Province of Residence (if applicable): (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_

What is your occupation? \_\_\_\_\_ Employer: \_\_\_\_\_

**Public health please indicate appropriate relationship based on occupation/employer:**

Relationship to Farm:  Farm owner  Family member of owner  Farm employee  
 CFIA worker  Other (specify): \_\_\_\_\_

Date of Birth (dd/mm/yyyy): \_\_\_\_/\_\_\_\_/\_\_\_\_ or Age: \_\_\_\_yrs Gender:  Male  Female  Unknown

### Section III. SYMPTOMS

1. Have any of the following eye symptoms started or become worse than usual since \_\_\_\_\_ <date of outbreak onset>? (Tick all that apply. **Please record only NEW or WORSE symptoms**)

- |                      |                                  |                                    |                |                                  |                                    |
|----------------------|----------------------------------|------------------------------------|----------------|----------------------------------|------------------------------------|
| Red eye(s)           | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Tearful eye(s) | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Burning eye(s)       | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Painful eye(s) | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Itching eye(s)       | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes | Pus in eye(s)  | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |
| Sensitivity to light | <input type="checkbox"/> One eye | <input type="checkbox"/> Both eyes |                |                                  |                                    |

**If yes**, what day did the first of these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

**If yes**, how would you rate these symptoms?  Mild  Moderate  Severe  Unknown

**If yes**, did these symptoms start suddenly or gradually?  Suddenly  Gradually  Unknown

2. Have any of the following influenza-like symptoms started or become worse than usual since \_\_\_\_\_ <date of outbreak onset>? (Tick all that apply. **Please record only NEW or WORSE symptoms**)

- |  |                                   |                                       |
|--|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Fever → Temperature _____ | <input type="checkbox"/> Cough    | <input type="checkbox"/> Runny Nose   |
| <input type="checkbox"/> Sore Throat               | <input type="checkbox"/> Headache | <input type="checkbox"/> Muscle Aches |
| <input type="checkbox"/> Fatigue                   | <input type="checkbox"/> Diarrhea | <input type="checkbox"/> Joint Aches  |
| <input type="checkbox"/> Chills                    | <input type="checkbox"/> Sweats   |                                       |

**If yes**, what day did these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

**If yes**, how would you rate these symptoms?  Mild  Moderate  Severe  Unknown

**If yes**, did these symptoms start suddenly or gradually?  Suddenly  Gradually  Unknown

3. Did you have any other symptoms that started or became worse than usual since \_\_\_\_\_ <date of outbreak onset> that you think may have resulted from contact with poultry?  Yes

- No  Unknown

**If yes**, please describe your symptoms:

---



---



---



---

**If yes**, what day did these symptoms start (dd/mm/yyyy)? \_\_\_\_/\_\_\_\_/\_\_\_\_

*If respondent reports any of the symptoms mentioned above, please make arrangements to collect serum, eye swabs and nasaopharyngeal swabs for laboratory testing.*

### Section IV. CONTACTS

- How many people live in the same house as you (not including yourself)? \_\_\_\_\_
- Besides other people living in your household, with how many people do you have close personal contact? This may include family members, intimate partners, etc. \_\_\_\_\_
- Have any of your household members or other personal close contacts told you that they have had any of the symptoms I mentioned earlier?  Yes  No  Unknown

4. **If yes**, what is/are their name(s), what symptoms did they experience, and how may we contact them?

Name	Relationship	Symptoms	Onset (dd/mm/yyyy)	Contact Number
			/ /	
			/ /	
			/ /	
			/ /	

**For public health completion:** Are these ill contacts potential products of person-to-person transmission?

- Yes  No  Unknown Please explain (yes or no): \_\_\_\_\_

**If the respondent did not have any symptoms please continue with Section VII, « Other People Exposed ».**

**Section V. CLINICAL INFORMATION**

1. Did you see a physician for your symptoms?  Yes  No  Unknown  
**If yes**, was the physician a (*tick all that apply*):  General Practitioner or a  Specialist  
**If yes**, what was the diagnosis? \_\_\_\_\_

**Physician Name**

**Physician Address/Phone Number**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Did you go to an Emergency Room for these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

3. Were you hospitalized overnight for these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

4. Did you have a chest X-ray taken because of these symptoms?  Yes  No  Unknown  
**If yes**, where: \_\_\_\_\_ If yes, when (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_  
**If yes**, what was the result: \_\_\_\_\_

5. How are you feeling today?  The Same  Better  Worse  Completely Recovered  
**If recovered**, what was the first day that you no longer had any symptoms? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

6. Did you have any tests done? (Tick all that apply – To be asked when the information cannot be obtained directly from a laboratory or clinician.)

- Yes, swab from the nose  Yes, swab from the eye  
 Yes, blood sample  Yes, other (specify) \_\_\_\_\_  
 Yes, chest X-ray  
 No  Unknown

7. Have you received influenza vaccination since September past?  Yes  No  Unknown

**If yes**, date? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

**If yes**, why?

- Age over 65  Lung disease (e.g. asthma, emphysema, COPD)  
 Diabetes  Immune deficiency  
 At my own request  Because of avian influenza (after \_\_\_\_ <date of outbreak onset>  
 Offered through work before \_\_\_\_ <date of outbreak onset>  Other (specify) \_\_\_\_\_

8. Have you taken anti-viral medications (e.g. Tamiflu or Amantadine) since \_\_\_\_ <date of outbreak onset>?

- Yes, as a treatment for eye/influenza symptoms  No  
 Yes, as a preventative measure due to exposure to poultry  Unknown  
 Yes, for another reason (specify) \_\_\_\_\_

**If yes**, specify name (e.g. Tamiflu or Amantadine): \_\_\_\_\_

**If yes**, how many tablets did you take each day? \_\_\_\_\_

Start date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stop date: \_\_\_\_/\_\_\_\_/\_\_\_\_

9. Are you currently a smoker?  Yes  No **If yes**, how many packs do you smoke each day? \_\_\_\_  
For how many years have you smoked? \_\_\_\_\_

## Section VI. EXPOSURE INFORMATION

1. Since \_\_\_\_\_ <date of outbreak onset> have you had contact with poultry, poultry products, or poultry manure?  
 Yes    No    Unknown   **If yes**, When was your first contact/exposure? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_  
 When was your last contact/exposure? (dd/mm/yyyy) \_\_\_\_/\_\_\_\_/\_\_\_\_

2. Do any of these statements apply to you (tick **all** that apply)?
- |  |                              |                             |                                  |
|--|------------------------------|-----------------------------|----------------------------------|
| a) I own a poultry farm  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| b) I live on a poultry farm                                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| c) I am a family member or household contact of a poultry farmer | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| d) I am employed by a poultry farm                               | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| e) I am a veterinarian   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| f) I have been helping cull poultry                              | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| g) I have been transporting poultry carcasses                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| h) I have been working at an incinerator                         | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| i) Other (please specify): _____                                 |                              |                             |                                  |

3. What poultry farm(s) have you visited or worked on since \_\_\_\_\_ <date of outbreak onset>? Were these infected with avian influenza? (Last 4 columns to be completed by public health staff with information from CFIA.)

Name of Farm	Farm Location	Infected?	Date Positive (dd/mm/yyyy)	Date Culled (dd/mm/yyyy)	Date Clean (dd/mm/yyyy)
_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	_____	_____
_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	_____	_____
_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	_____	_____

4. Have you participated in any of the following activities (**Please tick all that apply**)?
- |   |                              |                             |                                  |
|---|------------------------------|-----------------------------|----------------------------------|
| a) I have not been directly involved with poultry                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| b) I worked at an incinerator   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| c) I worked in a slaughter house  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| d) I brought equipment to farms (e.g. equipment to gas flocks)                      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| e) I worked with carbon dioxide gas to euthanize the birds                          | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| f) I collected eggs   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| g) I was in direct contact with surfaces that may have been contaminated by poultry | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| h) I was in direct contact with manure from the poultry                             | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| i) I shared a confined air space with infected or potentially infected poultry      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| j) I assessed the health of poultry   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| k) I caught live poultry  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| l) I had other contact with live poultry (specify) _____                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| m) I collected dead poultry   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| n) I had other contact with dead poultry (specify) _____                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| o) I loaded / unloaded poultry carcasses into / out of trucks                       | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unknown |
| p) Other (please specify): _____  |                              |                             |                                  |

5. Do you wash your hands after such exposure/activities?    Yes    No    Unknown  
 If yes, is this:    Always    Usually    Sometimes    Rarely

6. **If you have been exposed to potentially infected poultry**, were you wearing any of the following during your exposure? (tick all that apply)
- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> Gloves                                      | <input type="checkbox"/> Mask (Type _____)  | <input type="checkbox"/> Goggles             | <input type="checkbox"/> Safety glasses |
| <input type="checkbox"/> Impermeable Coveralls                       | <input type="checkbox"/> Disposable shoes or shoe covers                                  | <input type="checkbox"/> Head and hair cover |   |
| <input type="checkbox"/> Disposable Outer garments                   | <input type="checkbox"/> Boots that you clean and disinfect after exposure and wear again |  |   |
| <input type="checkbox"/> Outer garments that you wash and wear again |   |  |   |

**Section VI. EXPOSURE INFORMATION cont.**

7. Can you remember any concerning incidents in terms of exposure? Please describe. Please keep in mind that all of this information will be kept confidential (use space overleaf if necessary).

\_\_\_\_\_

8. Have you had close contact with a person who lives/works on a poultry farm and who has/had respiratory or eye symptoms?  Yes  No  Unknown

*By close contact, we mean family members, roommates, intimate partners, etc.*

**If yes**, who (and relationship to you)? \_\_\_\_\_

**If yes**, date of first exposure (dd/mm/yyyy): \_\_\_/\_\_\_/\_\_\_\_\_ Date of last exposure(dd/mm/yyyy): \_\_\_/\_\_\_/\_\_\_\_\_

**People at increased risk:**

9. Are there any children in your household?  Yes  No  Unknown

10. Are there any elderly people in your household?  Yes  No  Unknown

11. Do you have a heart or lung condition?  Yes  No  Unknown

12. Do you have any other chronic conditions?  Yes  No  Unknown

If yes to any other chronic conditions, specify: \_\_\_\_\_

13. Have you been told that you have a weak immune system?  Yes  No  Unknown

*This could be due to a health condition (e.g. cancer, HIV) or medications that you may be taking.*

If yes to a weak immune system, specify: \_\_\_\_\_

14. Do you have a chronic eye condition?  Yes  No  Unknown

If yes to a chronic eye condition, specify: \_\_\_\_\_

15. Do you have any allergies?  Yes  No  Unknown

If yes, to any allergies:  Food  Dust, dander, pollen  Medication  Other, sp: \_\_\_\_\_

***If any elderly people, children or persons with weak immune systems or chronic conditions are in the household, these persons should be strongly encouraged to avoid any contact with poultry that may be infected.***

**Section VII. OTHER PEOPLE EXPOSED**

**If exposed at a farm:** Have any other people had close contact with infected birds at the same farm as yourself (direct handling of birds or manure or shared the same confined airspace as infected birds)?

Yes  No  Unknown; If yes, how many people? \_\_\_\_\_

**If yes**, what are their names? What symptoms did they experience? What are their phone numbers?

Name	Symptoms (specify, or indicate none or unknown)	Contact Number
------	---	----------------


Thank you very much for taking the time to answer our questions. It is rare for this form of avian influenza virus to cause illness in people. There may be other questions we need to ask you as part of our public health follow-up and if so we may call you back. You are also free to call us anytime if you have any questions at: \_\_\_\_\_.

**Finally**, if special studies are set up in the future to understand avian influenza viruses, would you be interested in hearing about these?  Yes  No

**NOTE TO INTERVIEWER:** Conclude with relevant public health recommendations and offer to send “Dear Poultry Farmer” letter or other information if appropriate and not already received.

## **Annex H: Sample Farmer Information Letter**

**Dear Poultry Farmer –**

**Please also share this information with your family, crew, co-workers & employees -**

### **Avian Influenza – Important Health Information for Poultry Farmers, their Families and Employees**

#### **I. What is avian influenza?**

Influenza (“flu”) viruses that infect birds are called avian influenza viruses. These viruses are related to but different from human influenza viruses. Some avian influenza viruses are called “highly pathogenic” because they can cause severe outbreaks of “bird flu” or “chicken flu” in poultry that can spread quickly between flocks.

#### **II. What is the cause of avian influenza outbreaks in BC in 2004?**

A “highly pathogenic” avian influenza virus is currently causing illness in poultry flocks in the Fraser Valley. This virus belongs to the H7 subtype of influenza virus and is called H7N3. H7 subtypes of avian influenza have caused serious outbreaks in poultry before. In the Netherlands, an outbreak of a “highly pathogenic” H7N7 avian influenza virus led to the depopulation of 30 million birds during the spring and summer 2003.

It is likely that wild waterfowl such as ducks or geese are the original source of outbreaks of avian influenza in poultry. Waterfowl are known to be infected with many different avian influenza viruses and they can shed these viruses in their feces even if they are not ill. Commercial and domestic farms may be contaminated as waterfowl migrate. The spread of the avian influenza virus from farm-to-farm thereafter may occur in many different ways including contaminated vehicles, equipment or surfaces (such as boots or clothing) or by infected people.

#### **III. Can avian influenza viruses cause infections in humans?**

Only a few avian influenza viruses have been known to cause illness in people. This likely occurs by direct contamination of the eyes, nose or mouth or by contaminated hands, or by breathing in virus released into the air of a confined space. Such infections have been reported with “highly pathogenic” H5 and H7 subtypes of avian influenza viruses. H5 avian influenza viruses have caused widespread poultry outbreaks in Asia and people have died from severe illness as a result of close contact with infected birds.

Human illness due to H7 occurred in the Netherlands in 2003 in people who had close contact with infected birds. In some cases, infected people also passed it on to their household or other close personal contacts. Most people who got avian influenza due to H7 in the Netherlands had mild illness, but one person died. The H7 strain of avian influenza affecting birds in the Fraser Valley has also caused mild illness, such as red eyes, cough, sore throat and runny nose in people who have had close contact with infected birds.

#### **IV. Why is it so important to prevent avian influenza infections in people?**

It is very important to prevent infections due to avian influenza viruses in people, even if it seems like it is only a mild illness. The reason for this is because influenza viruses are very changeable. Sudden mutations in the virus can lead to severe illness, even if the virus only caused mild symptoms initially. Also, if a person is infected with an avian influenza virus and with a human influenza virus at the same time, the two viruses can mix and exchange information so that the bird virus can learn how to spread easily from person to person. When these changes occur, there is a risk that large scale outbreaks (or “pandemics”) of severe disease in people could get started. For this reason it is very important to prevent any infection due to avian influenza virus in people. Poultry farm operators, their families or their employees are of greatest concern to us, because they might have close unprotected contact with infected birds and can then be the link between poultry outbreaks and outbreaks in people.

## **Avian Influenza – Protect Your Farm and Your Family**

**1. Follow strict hygiene measures after contact with poultry, manure or contaminated surfaces.** Wash your hands frequently with soap and water for at least 30 seconds and avoid touching your eyes, nose or mouth with your hands.

**2. Reduce the amount of time you spend in close contact with potentially infected poultry or manure.** By close contact, we mean minimize direct handling or sharing the same confined airspace as the birds or manure. Elderly people, children, & persons with chronic or immune-compromising conditions should avoid any contact with potentially infected poultry or manure. Persons with flu-like symptoms should avoid contact so as to minimize the chance that human and bird influenza viruses could mix.

**3. When in close contact with potentially infected poultry or manure, wear protective equipment:**

- Disposable gloves or heavy duty rubber work gloves that can be disinfected should be worn. Remove gloves promptly after use and before touching non-contaminated items or surfaces and wash your hands immediately with soap and water for at least 30 seconds.
- Protective clothing, preferably disposable and impermeable outer garments or coveralls should be worn.
- Open wounds or sores should be covered.
- Disposable head or hair cover should be worn.
- Disposable protective shoe covers are preferred but if not available, wear rubber or polyurethane boots that can be cleaned & disinfected.
- Disposable masks (N-95, fit-tested) should be worn. Safety goggles should be worn to protect the eyes.
- After use, disposable personal protective equipment should be double-sealed in plastic bags and discarded as directed by the Canadian Food Inspection Agency.
- Non-disposable equipment or apparel should be cleaned of any soil, manure or other organic matter and then disinfected before being introduced into a non-contaminated environment. Utmost caution should be followed during the cleaning or disinfecting procedure including wearing of gloves, outer garment and goggles to prevent splash of infected material.

**4. Farmers, families, crews, employees or visitors should restrict their movement between avian influenza infected and non-infected farms.** Shoes or other potentially contaminated clothing worn near or in barns with infected (confirmed or where there has been unusual bird illness or die-off) poultry, manure or products should ideally not be worn off that immediate site, and if so, only after thorough cleaning and disinfection. Farmers, employees or crews from infected farms should not visit, travel to or from or work on non-infected farms and any visitors to infected farms should be restricted until the farm is officially cleared. A process for cleaning & disinfecting shoes of unexpected visitors should be in place for when they leave the premises.

**5. During this outbreak, poultry farm workers, their families and employees who may have close contact with any poultry should receive this year's influenza vaccine as soon as possible.** This is to prevent infection with human influenza viruses that are still known to be circulating in BC as of April 2004. This vaccine is free to you and can be obtained through the local health unit for this outbreak. This vaccine is available free of charge. To find out how to obtain the vaccine, phone Public Health at 1-866-854-5255.

**6. Farmers or other persons with close contact with known avian influenza infected poultry or manure (or on a poultry farm in the control zone where there have been unusual illness or die-off amongst birds) should receive a drug called Tamiflu® during their exposure to prevent infection with avian influenza.** This drug is available free of charge during this outbreak if you present this letter and a prescription from your doctor. Phone Public Health at 1-866-854-5255 to find out how to obtain this medication. The drug should be continued until the poultry have been removed, barns have been cleaned and manure has been covered for compost or else removed. Other people on poultry farms in

the control area who do not have close contact with infected or ill birds or possibly contaminated manure should watch closely for flu-like symptoms in themselves and seek immediate medical care should they occur. If you are uncertain about your own risk or possible exposure, please contact Public Health at 1-866-854-5255 for advice.

**7. Watch for red, itchy or burning eyes or flu-like symptoms (i.e., cough, runny nose, sore throat, feverishness or aches) starting within one week of exposure to poultry, manure or contaminated surfaces or contact with other ill persons who may have had this kind of exposure.** If these symptoms develop seek medical care immediately and notify the health care provider of your possible exposure before arriving at his/her office so he/she can take proper precautions. Take this letter with you and request that he/she contact the local Medical Health Officer for detailed information on testing and early treatment with Tamiflu®. You should also report your symptoms to Public Health at 1-866-854-5255 directly. You will receive instructions on how to limit the risk to your household or other close personal contacts. Except for visiting your physician, stay home and minimize contact with others until you are advised by Public Health that you can resume normal activities (usually until 24 hours after symptoms have completely cleared).

# Annex I: Sample Letter for Contacts of Avian Influenza Virus

Dear Sir / Madam,

## Re: Avian Influenza – Important Information to Protect Yourself and Your Community

You have received this letter because you may be exposed to avian influenza virus in chickens (Chicken Flu). If you have any questions after reading this letter, please contact your local health unit or workplace health services.

### What is avian influenza?

Influenza viruses that infect birds are called avian influenza viruses. These are related to but different from human influenza viruses. Most avian influenza viruses do not cause illness in humans and most are not passed from person-to-person. Only a few avian influenza viruses have been known to cause illness in people.

### What is the risk to me?

It is possible that people could become infected with an avian influenza virus if they have contact with a living or dead infected bird or its feces, respiratory secretions, products or contaminated surfaces or by breathing in virus released into the air of a confined space. Such infections have been reported with H7 and H5 subtypes of avian influenza viruses. Human illness due to H7 has mostly been mild, with only one death reported in the Netherlands in 2003, but human illness due to H5 has been severe with several deaths being reported in people in Asia.

### What are the risks to others?

Influenza viruses are very changeable. If a person is infected with an avian influenza virus and with a human influenza virus at the same time, the two viruses can exchange information so that the avian influenza virus can then spread easily between people. Mutations in the virus can also cause severe illness in others, even if it only causes mild symptoms in people who are first infected. When these changes occur, there is the risk that large scale outbreaks (or “pandemics”) could get started. It is important for everyone that strict public health and workplace safety recommendations are followed to help prevent such pandemics when working with poultry outbreaks of avian influenza.

### How do I protect myself and others when exposed to an avian influenza outbreak?

The following safety guidelines should be strictly followed when working at an avian influenza outbreak:

- a. You should receive the current season's **influenza vaccine as soon as possible** and ideally two weeks before planned work or other exposure. Although the vaccine will not protect you from avian influenza, it will prevent dual infections with avian and human influenza viruses at the same time. The vaccine can be obtained free from your physician, local health unit or workplace health service when you present this letter.
- b. You should receive Oseltamivir (Tamiflu®), an anti-influenza drug, daily during your exposure and for seven days after your last exposure to living or dead infected poultry, products, secretions or contaminated surfaces. **This is to protect you from avian influenza.** To obtain a prescription, contact your personal physician. Always take this letter with you. The drug is available free to you from your local health unit when you present the prescription AND this letter or you can buy it at a pharmacy with your prescription.
- c. Follow **strict personal protective measures** while exposed including: the wearing of disposable gloves, protective clothing and shoes, safety goggles and disposable fit-tested masks (particulate respirators, N95 type). After contact with living or dead infected poultry, products or contaminated surfaces and after removal of gloves, wash your hands thoroughly for 30 seconds. Full safety precautions should be reviewed with your supervisor and/or workplace health and safety representative before entering the site.
- d. **Watch for signs of illness** such as fever, respiratory symptoms (cough, sore throat, runny nose etc), eye infections (redness or discharge) or other flu-like symptoms for **one week** after your last exposure to live or dead avian influenza-infected birds, products, secretions or contaminated surfaces.
- e. **If symptoms develop**, seek immediate medical care. Notify the health care provider of your exposure to avian influenza and take this letter with you so he/she can take proper precautions and prescribe appropriate testing and treatment. Treatment is most effective if given within 48 hours of onset of symptoms so see your physician right away.
- f. **If symptoms develop**, also notify the local health unit, and your workplace health and safety representative immediately. Except for visiting your physician, stay home and minimize contact with others until you are advised by the local health unit that you can resume normal activities (usually 24 hours after symptoms have cleared).

# Annex J: Sample Letter for Physicians seeing Contacts of Avian Influenza Virus

Dear Doctor,

## Re: Exposure to Avian Influenza: Vaccination, Prophylaxis or Testing & Treatment

This patient is presenting because of possible exposure to avian influenza for one of three reasons: (1) to receive influenza vaccine pre-exposure; (2) to receive a prescription for prophylaxis with an antiviral drug during exposure or (3) for testing and treatment because of flu-like symptoms that have developed following exposure. The information below may assist you in managing this patient appropriately. For more information or if you have any questions, please contact the local health unit.

### **I. Vaccination to Prevent Illness Pre-Exposure**

All poultry workers who will be exposed to live or dead avian influenza infected birds, bird products, secretions or contaminated surfaces should receive the current season's influenza vaccine at no charge to them and as early as possible before exposure (preferably, at least two weeks prior). If exposure has already occurred, vaccination is still encouraged in order to protect against future re-exposures.

Such vaccination will not protect the worker from avian influenza but will help guard against genetic reassortment between avian influenza and human influenza virus strains as a result of dual infection. This is an important public health measure to guard against introduction of novel subtypes of influenza viruses into the human population and to help avert potential pandemics. Please provide this vaccine from the publicly funded supply of influenza vaccine to patients presenting with this letter who have not already been vaccinated this season. If vaccine is unavailable in your office, please arrange for provision via the local health unit. Again, this vaccine should be provided at no charge to the patient.

### **II. Prophylaxis to Prevent Illness During Exposure**

Antiviral prophylaxis to prevent illness during exposure is recommended for all workers. This should be taken daily during exposure and for seven days after last exposure with living or dead avian influenza infected poultry, products, secretions or contaminated surfaces. A neuraminidase inhibitor (Oseltamivir) is the first choice since the likelihood is smaller that the virus will be resistant to this class of antiviral drugs than to amantadine.

Review contraindications with the patient and if appropriate, provide a prescription for Oseltamivir for this patient. If you have concerns, consult with the local Medical Health Officer. Oseltamivir is available in limited quantities for purchase from a local pharmacy. During this outbreak, it is also available free of charge from the local health unit for poultry workers when accompanied by a doctor's prescription and this letter.

The recommended dose of Oseltamivir for anti-influenza prophylaxis is 75 mg once daily for the period of exposure and for seven days after the last exposure.

### **III. Testing and Treatment Post-Exposure if Symptoms Develop**

If the patient is presenting with fever, respiratory symptoms, conjunctivitis or other influenza-like illness with onset within one week of last exposure to live or dead avian influenza infected poultry, products, secretions or contaminated surfaces, please do the following:

- 1) Take personal protective measures including respiratory precautions when handling the patient (isolation, mask, gloves, handwashing).
- 2) Notify the local Medical Health Officer immediately.
- 3) In consultation with the local Medical Health Officer, obtain appropriate specimens (nasal, nasopharyngeal, conjunctival swabs) in a virus specimen collection kit as well as a clotted blood specimen for acute serology followed by a second blood specimen at least two weeks later for convalescent serology.
- 4) Review contraindications and if appropriate, prescribe treatment. Treatment with anti-influenza drugs is most effective if given within 48 hours of onset, but more delayed treatment may be considered if the patient presents late, in consultation with the health unit. A neuraminidase inhibitor (Oseltamivir) is the first choice.
- 5) Dosage for treatment with Oseltamivir is: 75 mg bid for five days.
- 6) Oseltamivir is available in limited quantities for purchase from a local pharmacy. During this outbreak, it is also available free of charge from the local health unit for poultry workers. The worker must have a doctor's prescription and should bring this letter with him/her.

**Please keep a copy of this letter on file and ensure the patient also retains a copy.**

## Annex K: Sample Oseltamivir Information Sheet

### OSELTAMIVIR PHOSPHATE (Tamiflu®):

Oseltamivir is a drug which prevents the spread of the influenza virus in an infected person. It is a neuraminidase inhibitor which inhibits the enzyme responsible for cleaving the viral load from the host cell thus preventing it from further dissemination. It is active against both influenza A and B viruses.

Oseltamivir is indicated both as a chemoprophylactic and treatment agent. It is most effective in uncomplicated influenza cases.

### Indications:

Oseltamivir is indicated for the treatment of influenza in patients 1 year of age and older within 2 days (48 hours) of onset of symptoms. The efficacy for oseltamivir has not been established for those patients beginning treatment after this 2 day period. It can be also used as a chemoprophylactic agent in persons 13 years of age and older. Oseltamivir is prescribed as an adjunct to influenza vaccination but is not a substitute for the vaccine. Oseltamivir is not indicated in children < 1 year of age.

### Contraindications:

Hypersensitivity to the drug or any of its excipients. The drug formulation contains pregelatinized starch, talc, povidone K 30, croscarmellose sodium, and sodium stearyl fumarate. The capsule shell contains gelatin, titanium dioxide, yellow iron oxide, black iron oxide, red iron oxide, and FD&C Blue No. 2 colourant.

### Pharmacokinetics:

Oseltamivir is administered orally. Oseltamivir is a prodrug that is hepatically metabolized extensively to oseltamivir carboxylate by hepatic esterases. Oseltamivir and oseltamivir carboxylate have low protein binding. Neither oseltamivir nor oseltamivir carboxylate are substrates, nor inhibitors of the cytochrome P450 isoenzymes.

Oseltamivir carboxylate is eliminated renally by excretion into the urine. Dosage adjustments are recommended in patients with renal impairment and with serum creatinine clearance < 30 mL/min.

### Precautions:

Safety in hepatic impairment has not been established. Adjust dosing if serum creatinine < 30 mL/min. Pregnancy category C: crosses the placenta and secreted into breast milk but no human data on safety; use in pregnancy and lactation only if potential benefits outweigh the risks.

### Drug Interactions:

No significant drug interactions. Co-administration with probenecid may result in a 2-fold increase in exposure to oseltamivir carboxylate, however this does not compromise the safety margin of the oseltamivir carboxylate.

### Adverse Effects:

Nausea and vomiting are reported most commonly and are generally mild to moderate, occurring during the first 2 days of therapy.

Other less common effects include diarrhea, abdominal pain, otitis media/ear disorder, asthma, epistaxis, pneumonia, sinusitis, bronchitis, conjunctivitis, dermatitis, lymphadenopathy, and tympanic membrane disorder.

Observed effects (post-marketing): rash, swelling of the face or tongue, toxic epidermal necrolysis, dermatitis, rash, eczema, urticaria, erythema multiforme, Stevens-Johnson-Syndrome, hepatitis, abnormal liver function tests, arrhythmia, seizure, confusion, anaphylactic reactions, and aggravation of diabetes. The causal relationship of these adverse effects to the drug has not been established.

### Dosage:

Body Weight, Age, or Serum Creatinine	Treatment	Prophylaxis
<b>Body Weight</b> ≤ 15 kg ( ≤ 33 lbs)	30 mg bid x 5 days	
> 15 to 23 kg ( > 33 to 51 lbs)	45 mg bid x 5 days	
> 23 to 40 kg ( > 51 to 88 lbs)	60 mg bid x 5 days	
> 40 kg ( > 88 lbs)	75 mg bid x 5 days	
<b>Age:</b> > 13 years and older	75 mg bid x 5 days	75 mg od x 7 days
<b>Serum Creatinine:</b> 10 to 30 mL/min	75 mg od x 5 days	75 mg every other day x 7 days or 30 mg od (suspension) x 7 days

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9. Canadian Animal Health Network (CAHNet) website: [www.cahnet.org](http://www.cahnet.org)
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