Managing the human health implications of avian influenza in poultry and wild birds

Guidance for health protection teams

Version 3.0
About Public Health England

Public Health England exists to protect and improve the nation’s health and wellbeing, and reduce health inequalities. We do this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health, and are a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.
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1. Summary

This document updates the previous version (Guidance for Health Protection Units on dealing with human health implications of avian influenza (AI) in poultry and wild birds, version 2).

This update covers, as did the previous version, guidance for health protection teams (HPTs) with regard to the human health implications when responding to suspected and confirmed avian influenza in avian species, and includes the strict and standard approaches for avian influenza incidents.

Whilst Defra leads on the management of avian influenza incidents and outbreaks in poultry and wild birds, HPTs are responsible for leading the local public health response to these incidents, working in close collaboration with the Department for the Environment, Food and Rural Affairs (Defra) and the Animal and Plant Health Agency (APHA). The public health response will be delivered jointly with the local authority (LA), local NHS and with support from PHE colleagues regionally and nationally.
2. Purpose

The purpose of this guidance is to assist HPTs in planning for, and dealing with, the human health implications of a suspected or confirmed avian influenza incident, in either live or dead wild birds or domestic poultry. Based on standard health protection principles, this guidance aims to ensure that a consistent approach is adopted across PHE in responding to AI incidents.

3. Introduction

HPTs have a lead role in managing the human and public health consequences of AI incidents involving large-scale commercial poultry establishments, smaller backyard premises or wildlife. Responding to these incidents requires close collaboration with the Defra, the Animal & Plant Health Agency (APHA), LAs and the local NHS.

This guidance document has been developed to support HPTs in undertaking the risk assessment underpinning the management of avian influenza incidents. The guidance builds on standard principles of outbreak management and incorporates lessons learnt during previous AI incidents in the UK (Table 1).

<table>
<thead>
<tr>
<th>Year</th>
<th>Subtype</th>
<th>Type</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>H5N1</td>
<td>HPAI</td>
<td>Wild Swan in Scotland</td>
</tr>
<tr>
<td>2006</td>
<td>H7N3</td>
<td>LPAI</td>
<td>Three chicken flocks affected in Norfolk</td>
</tr>
<tr>
<td>2006</td>
<td>H5N1</td>
<td>LPAI</td>
<td>Turkeys in Suffolk</td>
</tr>
<tr>
<td>2007</td>
<td>H7N2</td>
<td>LPAI</td>
<td>Chickens at a farm in Wales</td>
</tr>
<tr>
<td>2007</td>
<td>H7</td>
<td>LPAI</td>
<td>Non-commercial small-holding, Merseyside</td>
</tr>
<tr>
<td>2007</td>
<td>H5N1</td>
<td>HPAI</td>
<td>Poultry in Suffolk</td>
</tr>
<tr>
<td>2008</td>
<td>H5N1</td>
<td>HPAI</td>
<td>Identified in wild birds on the Dorset coast</td>
</tr>
<tr>
<td>2008</td>
<td>H7N7</td>
<td>HPAI</td>
<td>Flock of laying chickens in Oxfordshire</td>
</tr>
<tr>
<td>2014</td>
<td>H5N8</td>
<td>HPAI</td>
<td>Flock of breeding ducks in East Yorkshire</td>
</tr>
<tr>
<td>2015</td>
<td>H7N7</td>
<td>LPAI</td>
<td>Broiler chicken farm in Hampshire</td>
</tr>
<tr>
<td>2015</td>
<td>H7N7</td>
<td>HPAI</td>
<td>Poultry farm in Lancashire</td>
</tr>
<tr>
<td>2016</td>
<td>H5N1</td>
<td>LPAI</td>
<td>Broiler chicken farm in Fife, Scotland</td>
</tr>
<tr>
<td>2016</td>
<td>H5N8</td>
<td>HPAI</td>
<td>Turkey farm in Lincolnshire</td>
</tr>
</tbody>
</table>

Table 1: Avian Influenza H5 and H7 subtype events in the UK (HPAI: Highly Pathogenic Avian Influenza, LPAI: Low Pathogenicity Avian Influenza)


HPTs should use the document in their ongoing dialogue with local APHA colleagues, LAs and the NHS and in developing their own local plans for responding to avian influenza incidents.
4. Background

AI is a disease of animals caused by influenza A viruses. Influenza A viruses are classified according to the types of haemagglutinin (H1 to H18) and neuraminidase (N1 to N11) proteins on their surface. Influenza A viruses can also cause influenza in humans and other mammals. All known influenza A virus subtypes have been found in birds, except H17N10 and H18N11, which have only been identified in bats. Wild fowl act as natural asymptomatic carriers of influenza A viruses. Strains of influenza A virus may be transmitted from wild fowl to birds, pigs, horses, seals, whales and humans.

AI viruses are categorised as being Highly Pathogenic Avian Influenza (HPAI) or Low Pathogenicity Avian Influenza (LPAI) depending on their virulence in poultry. These terms do not reflect the seriousness of disease caused in humans; not all HPAI viruses infect humans, and LPAI viruses can cause severe illness in humans. Avian influenza A(H7N9) and A(H5N1) as causing significant morbidity and mortality in humans outside of Europe; there have been no cases within Europe.

AI is considered notifiable to the World Organisation for Animal Health (OIE) when:

- the subtype is either H5 or H7 (even if LPAI)
- any influenza A virus causing HPAI

For references relating to currently circulating avian influenza subtypes that are causing concern for either human or animal health, please see Annex 1.

5. Agency roles and responsibilities

5.1 Animal health

Defra is the lead government department for the management of AI incidents and outbreaks in poultry and wild birds and is the policy lead for outbreaks in England. Key Defra officials will make decisions concerning the policies upon which the disease control operation will be based (eg Chief Veterinary Officer). Officials are responsible for ensuring that strategic advice is translated into practical instructions to those carrying out the operational response.

In Great Britain, APHA is the delivery body and the lead for operational activities. A summary of the key APHA actions following notification of suspected AI can be found in Annex 2.
5.1.1 Defra/APHA organisational arrangements

Defra manages AI incidents centrally, using a command and control structure centred on its National Disease Control Centre (NDCC). Defra’s command structure for controlling animal disease is based on three levels of command. At the operational level, the Local Disease Control Centre (LDCC) will implement tactical advice from Defra’s National Disease Control Centre (NDCC) in line with the Contingency plan for exotic notifiable diseases of animals in England (2016).\(^1\)

5.1.2 The Local Disease Control Centre

The Regional Operations Director (ROD) heads the LDCC for APHA, which comprises a number of teams responsible for delivering the operational disease control response. In addition to APHA veterinary, technical and administrative staff, a number of operational partners and stakeholders will also be invited to attend. These include:

- regional resilience teams
- local authorities
- police
- Defra/APHA Health and Safety adviser
- Environment Agency (EA)
- HPT representative / Incident Management Team (IMT) liaison

Others may be invited by APHA as appropriate for the incident

5.1.3 LDCC roles and responsibilities

APHA will establish the LDCC to handle the operational response which will be focused on all aspects of animal disease control such as culling and disposal of animals, movement restrictions in the immediate area of the case and welfare of staff involved in the operation. The LDCC will implement tactical level advice in line with guidance set in the Defra contingency plan and operational instructions (eg Regional Operations Director (ROD)). Their main responsibility is the effective control and eradication of disease during an outbreak and allowing the industry to return to normality. This will include:

- identification of the source and possible spread of infection
- co-ordinating disease control measures on the infected premises including use of personal protective equipment (PPE) in conjunction with control of movement onto infected premises
- identification and tracing of poultry, people and vehicles/equipment which may have been in direct contact with infected poultry/materials
- identification and surveillance of poultry in the vicinity of the infected premises
• licensing the movements of poultry and poultry products within the restricted zones
• implementation of any changes in policy or controls
• provision of regular feedback to inform strategic decisions
• maintenance of satisfactory communications with external agencies with legitimate interest in the incident
• provision of an accurate and reliable source of information for other professionals, media and the public and designating a press spokesperson
• the LDCC will also receive advice from the IMT on human health control/counter measures and will provide input to lessons to be learned and incident/outbreak reports

5.1.4 Communications

Defra/APHA communications will produce initial communication messages and top line briefs (including lines from Food Standards Agency (FSA) and PHE as appropriate) and will pass these to regional teams for cascade locally. Regular feedback/briefings are also required by the IMT (responsible for managing the human health implications of the incident) and in all the EOCs. Information from the NDCC will be passed via NIS to the HPT.

5.2 Human health

HPTs are responsible for leading the public health response, working in close collaboration with Defra and APHA. The public health response will be delivered jointly with the LA, local NHS and with support from PHE colleagues regionally and nationally. Specialist support will be provided by the Influenza Preparedness and Response section at the National Infection Service (NIS), and the Emergency Response Department (ERD).

5.2.1 PHE organisational arrangements

Within PHE, AI incidents are led locally by the HPT, unless escalated to an enhanced national response as defined in the National Incident & Emergency Response Plan (2016).5

The HPT should convene an Incident Management Team (IMT) (Annex 3 & 4) at Defra’s suspicion level 3 (or at level 2 if appropriate) – further details on these levels are outlined in section 6 below. The role of the IMT is to co-ordinate measures for protecting the health of exposed people who have been in close contact with infected birds (and their close contacts), local residents and the wider public. The HPT will undertake a risk assessment informed by Defra’s level of suspicion and available laboratory results (Annex 5).
5.2.2 Incident Management Team (IMT) membership

The IMT core members may include:

- Consultant in Communicable Disease Control or consultant in Health Protection (CCDC/CHP)
- Deputy Director of Health Protection/Health Protection Team lead
- Representative of local NHS to co-ordinate the NHS response (CCG and/or local NHSE)
- Representative of Respiratory Diseases Department, NIS
- LA Director of Public Health (DPH)
- Appropriate LDCC liaison/APHA representative
- PHE Field Epidemiology Services liaison
- HPT information and surveillance officer
- PHE Emergency Planning Officer (EPO)
- PHE Communications
- Administrative support

Others may be invited as appropriate (eg NIS virology representative).

5.2.3 Roles and responsibilities of the IMT

The role of the IMT is to manage the public health impact of the incident ensuring that the potential consequences of AI on public health and the health of staff involved in disease control operations are minimised.

The role of the IMT will include:
- identifying and managing all those already exposed
  - agreeing exposure criteria
  - undertaking human health risk assessment
  - Agreeing and coordinating human health intervention according to the relevant management algorithm
  - liaison with specialist colleagues at PHE NIS
  - arranging prescription and administration of post exposure/pre-exposure antiviral prophylaxis, in line with local arrangements
  - providing and coordinating follow-up (clinical and serological) investigations and management with specialist support from NIS
  - agreeing and coordinating implementation using information from the LDCC about persons exposed to infected birds or associated materials.
- advising on minimising further exposure and reducing the likelihood of infection
- agreeing and coordinating (in consultation with others such as the HSE, and Defra/APHA, health and safety professionals) the arrangements for protecting those
who will potentially be exposed including:

- implementing locally agreed arrangements for the prescription and administration of pre-exposure antivirals
- Implementing locally agreed arrangements for delivery of antivirals
- Implementing locally agreed arrangements for follow up of exposed people
- Agreeing and coordinating the local response

- communication: provision of information on human health related matters as required to:
  - LDCC
  - Defra/DH Communications teams
  - Other divisions of PHE (including national teleconferences)
  - Individuals potentially exposed
  - Local partner organisations
  - General practitioners (GPs) and other local health services
  - Media/general public (including a spokesperson)

- declaring the end of the human health aspects of the incident

- writing an incident report to include lessons identified and how these will be taken forward

5.3 Alerting of an AI incident

5.3.1 Alerting the local HPT

APHA should contact the local HPT and discuss the situation with the duty Consultant in Communicable Disease Control/ Consultant in Health Protection (CCDC/CHP) as soon as they become aware of an AI incident at suspicion level 2 (Annex 5).

The HPT may also be alerted by:

- PHE ERD Duty officer
- PHE NIS through the Colindale Duty Director, Duty Doctor, or the Respiratory Diseases Department

5.3.2 Alerting within PHE

HPT staff should alert appropriate people as outlined in the PHE Emergency Preparedness Resilience and Response Concept of Operations (PHE CONOPS) depending on the level of the incident. This is likely to include:

- PHE Centre Director
- PHE Centre Deputy Director for Health Protection
- NIS Respiratory Diseases Department (or Colindale Duty Doctor Out of Hours)
5.3.3 Alerting the local NHS and LA

For ‘disease suspected’ or ‘disease confirmed’ animal AI incidents, the CCDC/CHP should alert LA Directors of Public Health (DPH), local NHS partners and the duty pharmacist at local hospital(s) holding PHE oseltamivir stocks (in preparation for mobilisation of these supplies). For ‘reports of suspicion’ of AI incidents, the CCDC/CHP may consider alerting LA and NHS partners.

5.3.4 Alerting the local APHA office

HPT staff should alert local APHA staff if they become aware of any reports of a febrile respiratory illness in persons who have been in contact with sick, dying or dead birds in the UK within 10 days of onset of their illness.

APHA should also inform the HPT or IMT of any local staff responding to an AI incident with symptoms of febrile respiratory illness as soon as possible.
6. Public health response

6.1 Initial stages

The PHE response is based on a combination of the level of suspicion as assessed by Defra\(^6\) and any laboratory results, and a risk assessment.

6.1.1 Defra level of suspicion

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Report of suspicion: a report to Defra/APHA resulting in a veterinary officer (VO) visiting the premises to investigate a case(s) of disease which may be consistent with AI. AI is one of a number of possible diagnoses under investigation.</td>
</tr>
<tr>
<td>2</td>
<td>Disease suspected: a Defra/APHA VO has assessed that disease/death in an avian species is consistent with the diagnosis of a notifiable avian disease which may be AI, and requires investigation/control measures. AI is the main working diagnosis.</td>
</tr>
<tr>
<td>3</td>
<td>Disease confirmed: a confirmed incidence of disease where symptoms are consistent with AI and supported by laboratory isolation of an influenza virus from the APHA reference laboratory in Weybridge.</td>
</tr>
</tbody>
</table>

6.1.2 Laboratory results

In the initial stages of an incident, laboratory results may not be available, or may only provide partial information. As further results become available the public health response may change. The usual sequence of results would be.

1) HPT are notified of an unidentified avian disease in birds, and Avian Influenza is suspected

2) Laboratory confirmation of Avian Influenza A

3) Confirmation that the subtype is (or is not) H5 or H7

4) Final confirmation of the subtype and pathogenicity

Results 2-3 are often available within 8 hours of receipt of specimens at the veterinary laboratory in Weybridge. It may take approximately 72 hours for confirmation of the full virus subtype. Pathogenicity results (e.g., HPAI or LPAI for birds) will generally be available between 2 and 12 days from receipt of samples.
6.1.3 Risk assessment

Until positive laboratory results are available, a risk assessment is necessary to decide on the appropriate course of action. This risk assessment will be based on the available evidence, with advice from Defra and from PHE staff with specialist epidemiological and virological expertise in the field of influenza (eg from the NIS at Colindale) and in consultation with the APHA.

6.2 The strict and standard approaches

The strict and standard approaches to managing AI incidents were approved by the Advisory Committee on Dangerous Pathogens (ACDP). The strict and standard approaches recognise that a different level of response may be required, depending on the virus subtype and risk assessment. The strict and standard approaches are not static, and the response may be upgraded or downgraded as further information becomes available or as the incident progresses.

6.2.1 Principles of the standard approach

The principles of the standard approach are:

- keeping the numbers of people exposed to the infected birds to a reasonable minimum
- not starting prophylaxis with neuraminidase inhibitors (or discontinuing use if already started as part of a strict approach) provided there have been:
  - no human deaths
  - no serious human illness
  - no sustained person-to-person transmission (as confirmed by laboratory tests) confirmed to be linked to that subtype, and
  - no large numbers of humans affected by common clinical syndrome suspected or confirmed to be linked to that subtype
- advising people who are likely to be exposed as responders on the correct appropriate use of PPE
- passive follow-up of persons exposed (provision of information and advised to contact HPT if feeling unwell)

6.2.2 Principles of the strict approach

The principles of the strict approach include:

- keeping the numbers of people exposed to an absolute minimum (balanced against practical needs to undertake necessary control measures)
- commencing prophylaxis with neuraminidase inhibitors for people already exposed (who have been in close contact with infected birds) as soon as possible
- advising people who are likely to be exposed as responders to commence prophylaxis in advance of commencement of duties
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- advising on the appropriate need for Personal Protective Equipment (PPE) use
- active follow-up of persons exposed and/or their close or family contacts dependent on expert epidemiological and virological advice

6.2.3 Circumstances where a strict approach should be used

The strict approach should be used when any of the following criteria are met:

1) When the haemagglutinin (H) subtype is known to be an H5, H7 or H9
2) Any incident when human deaths are already apparent, or are previously associated with the subtype
3) Any incident in which serious human illness is already apparent or strongly suspected, or is previously associated with the subtype
4) When person-to-person transmission is confirmed by laboratory tests
5) When widespread person-to-person transmission is suspected (but not necessarily confirmed)
6) Any incident, in which the expert virological or epidemiological advice suggests that the identified virus has pandemic potential

Identification of a H2 or H10 virus may also qualify for a strict approach as these have caused severe infection in humans. Expert virological and epidemiological advice should be sought on an incident-by-incident basis for these subtypes from the NIS. The standard approach may be upgraded to a strict approach when:

- AI associated human deaths are discovered
- severe illness in humans in this incident, or associated with this subtype
- any incident in which person-to-person transmission is confirmed by laboratory tests
- any incident in which widespread person-to-person transmission is suspected (but not necessarily confirmed) if expert virological or epidemiological advice suggests that the identified virus has pandemic potential

6.2.4 Exposure to unidentified disease in birds

Members of the public who have handled birds with unidentified disease (or their faecal material) where there is no specific information to indicate avian influenza, will generally be managed under the standard approach, unless information or risk assessment from APHA suggest a different approach.

Figure 1 (overleaf) is a simplified decision tree for choosing the appropriate approach. It should be read with consideration to the points above.
Figure 1. Summary decision tree for choice of strict or standard approach (see Section 6.2 for full details)

Key
- Initial Actions
- Information flows

1. Human exposure to an as yet unidentified disease in birds.
2. Human exposure to Avian Influenza but subtype not yet confirmed.
3. Human Exposure to confirmed Avian Influenza subtype H5 or H7?
   - Yes
   - No
4. Is the subtype H9?
   - Yes
   - No

Standard Approach
- Reduce human exposure to reasonable minimum
- Anyone coming into contact with birds should use adequate PPE
- Advise exposed persons to report any relevant illness
- If symptomatic, and avian influenza is confirmed, start treatment with oseltamivir

Are any of the following present in this incident (or previously associated with this subtype)?
- Death or serious illness in humans
- Laboratory confirmed human-to-human transmission
- Widespread person-to-person transmission of a relevant AI-associated clinical illness e.g. conjunctivitis?

Strict Approach
- Reduce human exposure to absolute minimum
- Anyone coming into contact with birds should use adequate PPE
- Start oseltamivir prophylaxis of persons exposed
- Monitor persons exposed for signs and symptoms
- If symptomatic, start treatment with oseltamivir
6.3 Management of persons exposed during an incident

There may be up to four key categories of persons exposed during an avian influenza incident:

Category A:
Persons who are exposed prior to the identification of an incident, who were not wearing appropriate PPE (and using antivirals, if applicable) at all times of exposure. This could include:
   a. Farm workers, other exposed workers, owners of backyard flocks or other people resident at the premises who have had exposure to birds or infected materials
   b. Veterinary staff
   c. Members of the public if they had direct contact with infected wild birds

Category B
Persons who will be occupationally exposed during the response to the incident, whilst wearing appropriate PPE (and using antivirals, if applicable). This could include anyone involved in the culling, disposal and clean-up operations at the premises or rendering facilities.

Category C
Non-occupational exposures: May include members of the public (or others) inadvertently handling sick or dead birds, or their faecal matter that is confirmed to be infected with AI. These individuals are unlikely to have been using appropriate PPE (and antivirals, if applicable) and would have been identified through passive reports to APHA or affected farms directly.

Category D
Members of the public or others outside of occupational settings, inadvertently handling sick or dead birds, or their faecal matter - where AI status cannot be confirmed (examples of such situations include a single or large bird die-off.) These individuals will generally be managed under the standard approach, unless information or risk assessment from APHA suggests a different approach.

Further details on the management of these groups can found in Annexes 7 and 8.

For both the strict and standard approach, the key public health actions will **always** include:

- co-ordination of health surveillance of individuals exposed during the incident (as described in section 6.3.2)
- investigation and management of any individuals within the above groups who develop potential symptoms of avian influenza infection (such as influenza-like illness or conjunctivitis). These individuals should be managed according to PHE guidance as possible human cases of avian influenza.
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- provision of regular updates to the PHE Centre Director, LA DPH and national team
- ensuring that PPE has been implemented (jointly with other responding agencies)

In addition, the strict approach will also require the following public health action:

- provision of antiviral prophylaxis

### 6.3.1 Antiviral chemoprophylaxis

#### Incidents in poultry

The decision on use of chemoprophylaxis is dependent on whether a strict or standard approach is deemed appropriate, to be started up to 7 days after the last exposure. The minimum course is normally of 10 days’ duration for Oseltamivir.

**Strict approach (categories A-C):**

In all AI incidents considered to require a strict approach antiviral chemoprophylaxis is advised. This is likely to include all incidents where the subtype of avian influenza is H5, H7 or H9. However, chemoprophylaxis of responders to incidents should be considered on a case-by-case basis, taking into account the evidence of the virus’ ability to cause human infection and/or severe disease. If in doubt, discuss with the Influenza Preparedness and Response Team or the NIS duty doctor.

The recommended dosage for chemoprophylaxis against avian influenza is 75mg of oseltamivir, once daily for each day that exposure occurs. This should be continued for 10 days after the last exposure to the incident.

Prophylaxis should be started prior to individuals having contact with birds. If exposure has already occurred, prophylaxis should be started within seven days of the last exposure. The maximum recommended duration of prophylaxis is 42 days, and advice should be sought if it is likely to be required for longer than this.

Note on A(H7N9): For A(H7N9) a treatment dose (75mg oseltamivir, twice daily) is recommended for prophylaxis, due to concerns over potential resistance to oseltamivir – see PHE Guidance.

If any individuals are unable to take oseltamivir, this should be discussed with the Respiratory Diseases Department.

The exception to the recommendations above would be for individuals in Category B (wearing full PPE) who have responded to a wild bird incident, which requires a risk assessment on an individual incident basis.
PHE provides specialist public health advice but does not undertake prescribing of antivirals in avian influenza incidents, which is the responsibility of the NHS.

**Standard approach (all categories):**

Antiviral chemoprophylaxis not routinely advised as long as all conditions in section 6.2.3 are applicable.

**6.3.2 Health surveillance of individuals exposed during the incident**

If the strict approach is applied:

**Category A:**

*Active follow-up* for every day up to 10 days from the last date when exposure occurred without complete PPE (and antivirals, if applicable).

This active follow-up consists of daily contact between the HPT and the individual to check the latter has not developed any symptoms compatible with human AI (including conjunctivitis).

If PPE (or antivirals, if applicable) were started at a later date after an unprotected exposure, then the contact should be re-assigned to passive follow-up after the end of the active follow-up period. Passive follow-up should be continued for 10 days after the last exposure (passive follow-up is described below).

The individual should also receive standard information on potential symptoms and emergency contact instructions for the HPT (in case symptoms develop between daily contacts).

**Category B:**

- if the individual has been exposed to the incident while wearing complete PPE (and using antivirals, if applicable) during all exposures, then they should undergo passive follow-up until 10 days after the last exposure to the infected site. Passive follow-up involves provision of information on human AI symptoms for the individuals to be aware of and emergency contact instructions for the HPT.
- any individual who has not worn complete PPE during all exposures will require active follow-up according to Category A from the date of the last exposure without full PPE.
- in situations where an individual has unprotected exposure, followed by protected exposure with complete PPE, then they should have 10 days of active follow-up from the date of last exposure without complete PPE. The individual should then be given instructions for passive follow-up for a period up to 10 days after the last exposure with complete PPE.
Category C:

To be considered for active follow-up for 10 days from the date of exposure

Category D: Not usually applicable to the strict approach.

If the standard approach is applied:

Categories A-C:
All persons exposed to the infected site should undergo passive follow-up for 10 days after the last exposure (as explained above).

Category D:
Based on risk assessment with APHA. Possible approaches may include consideration of passive follow-up for a single bird without AI confirmation. Active follow-up may be considered for large bird die-off where AI has not been confirmed.

6.3.3 Management of symptomatic individuals

There should be local plans to respond swiftly to any reports of avian influenza-compatible symptoms in individuals under passive or active follow-up. These plans should include arrangements for prompt start of antiviral treatment, virological testing and infection prevention and control precautions for human avian influenza cases.

Individuals under active and passive follow-up should be given the contact details (as above) for the local HPT, and the HPT should link with the local NHS provider to ensure that the appropriate clinical assessment and patient management be facilitated.

The NIS Respiratory Diseases Department should be informed of any symptomatic individuals who are clinically assessed as suspected avian influenza cases and require virological testing.
Figure 2. Summary of public health actions

ALL INCIDENTS
- HPT prepared to co-ordinate management of individuals exposed, who develop symptoms of influenza-like illness or conjunctivitis
- Ensure PPE advice has been provided (via partners)
- Provide regular updates to Centre Director, LA, OPH and NIS

STRICT APPROACH

ANTIVIRALS
Groups A-C receive antivirals

ACTIVE FOLLOW-UP
Groups A and C

PASSIVE FOLLOW-UP
Group B*

STANDARD APPROACH

ANTIVIRALS
Groups A-D do not need antivirals

PASSIVE FOLLOW-UP
For all groups A-D

* = Only if PPE and antiviral chemoprophylaxis consistently used throughout the incident; see 6.3.1 (otherwise active follow-up)
References


6) ACDP meeting 15 June 2015
Annex 1: Currently circulating avian influenzas of concern

AI mainly affects birds, but some strains can be transmitted to humans and other mammals and cause illness. It is those strains that are of particular concern for public health and so they are monitored through various routes. Of particular concern are influenza H5 strains, especially H5N1. In recent years there have been recombination events involving H5N1 that have resulted in the generation of new subtypes, some of which have been highly pathogenic for avian species (e.g. A(H5N8)). Influenza H7 strains are also monitored, partly because there are some strains highly pathogenic for avian species and partly because of the appearance of LPAI A(H7N9), which although of low pathogenicity for avian species, has proved to cause higher morbidity and mortality in humans.

Defra monitors the situation in avian species in the UK but is alert to events in Europe and the rest of the world, which may have an impact on the UK. Defra updates on current situations and guidance for keepers of avian species can be found at: https://www.gov.uk/guidance/avian-influenza-bird-flu


The Food and Agriculture Organisation of the United Nations has a web-based application designed to support veterinary services by facilitating the organisation and access to regional and global disease information. This is updated regularly with up-to-date information on global animal disease distribution and current threats, including avian influenza. http://empres-i.fao.org/eipws3g/


It also publishes regular Disease Outbreak News, which sometimes includes avian influenza of significance to public health at: http://www.who.int/csr/don/en/

PHE monitors all of these sources of information and publishes updates, guidance and analyses at: https://www.gov.uk/government/collections/avian-influenza-guidance-data-and-analysis
Annex 2: The APHA Response - summary of key actions following notification of suspected AI

Notification of suspected AI to APHA Local office by:
- Owner/person responsible
- Private veterinarian
- Inspector
- Active surveillance (UK Poultry Survey)
- FSA (e.g. at slaughterhouse)

Telephone assessment by duty VO at APHA Local Office

AI ruled out on clinical grounds

AI Suspected
- Duty VO visit to premises
- Movement restrictions begin

Duty VO visit to premises, discuss case with VENDU

AI Suspected
- Declared suspect premises
- Additional control measures enforced
- Blood samples and swabs taken and sent to APHA reference laboratory (initial results within ~6 hrs)

AI Ruled out by Microbiology
- Restrictions lifted

Initial samples positive for AI

Further testing
- Confirmatory tests (H and N subtyping, pathogenicity testing)
- Implementation of DEFRA Contingency Plan
- Disease control zones established as necessary
- Chief VO to notifies the OIE and EC within 24 hours
- Culling of birds and disposal of contaminated material
- Cleansing and disinfection
Annex 3: Key roles within the PHE Incident Management Team

Chair: strategic overview of local health response, appropriate delegation of tasks, receiving progress reports, briefing others (eg local authority, Government Office, PHE teleconference). The chair should clarify liaison arrangements with the LDCC to ensure appropriate timely briefings. The chair should also ensure access to appropriate epidemiological and data management support at an early stage of an incident. The chair may be the PHE Centre Director, CCDC or the DPH.

LDCC liaison: liaison between the LDCC and the IMT. Defra’s Health and Safety Team have oversight of the Department’s occupational health provider during an outbreak. HPT must ensure that the nominated occupational health representative at the LDCC and NDCC is kept appraised of key decisions, to enable appropriate advice and actions to be taken in terms of occupational health management.

LA DPH: the DPH has the overall assurance role and is responsible for communication with the public and local stakeholders.

CCDC/Consultant in Health Protection: responsible for leading the local human health risk assessment, and for advising the IMT on the most appropriate response measures, taking account of all the circumstances of the current incident and advice from PHE staff with specialist epidemiological and virological expertise in the field of influenza.

In addition, they will be responsible for ensuring there are clear arrangements locally for managing and testing suspected symptomatic human cases among persons exposed during the incident, accessing emergency supplies of antivirals and liaison with NIS.

Office manager and administrative staff: record keeping, call handling, staff welfare, information for staff unfamiliar with local office systems, maintenance of rotas. Supporting appropriate epidemiological investigation to determine risk factors for infection, and establishing extent of human-to-human transmission.

Emergency Planning Officer (EPO): staffing support and forward planning.

Communication managers: LA, NHS and PHE communication managers are responsible for appropriate liaison with their colleagues from partner agencies to ensure consistent public health messages and agreeing multi-agency media statements.
Annex 4: Key interactions of the local IMT and external partners
Annex 5: Defra’s level of suspicion and National Alert levels (case specific), initial actions and associated PHE response to a suspect case of avian influenza

<table>
<thead>
<tr>
<th>State of Alert (Country-wide)</th>
<th>Level of Suspicion (Case Specific)</th>
<th>Possible Scenarios</th>
<th>PHE Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>White /Black</td>
<td>0 - Disease not suspected following vet enquiry</td>
<td>Any restrictions on premises lifted. No further action.</td>
<td>No HPT action required.</td>
</tr>
<tr>
<td></td>
<td>1 - Lesions and clinical disease not typical - but disease cannot be ruled out entirely on clinical grounds.</td>
<td>Suspect animal(s)/ birds left alive and observed. Samples taken for laboratory diagnosis.</td>
<td>HPT action not usually required. PHE Emergency Response Officer may be contacted at this stage. If local HPT contacted by APHA, then notify Regional Director and PHE duty doctor. Regional Director will notify the PHE Emergency Response duty officer and the Regional DPH.</td>
</tr>
<tr>
<td>Amber</td>
<td>2 - Lesions and clinical disease suggestive of the exotic notifiable disease but not entirely convincing. - Laboratory results are suggestive that exotic disease may be, or has been present</td>
<td>Suspect animal(s)/ birds showing lesions may be culled as a preventative measure (excluding those culled for post-mortem examination and collection of tissue samples). Samples taken and submitted for laboratory diagnosis.</td>
<td>Notifications as for Level 1. And alert LA DPH and NHS partners that Oseltamivir prophylaxis may be needed. HPT contact local Hospital Pharmacy to ensure Oseltamivir stocks are available.</td>
</tr>
<tr>
<td></td>
<td>3 - Veterinary staff on farm and at Headquarters (HQ) believe from investigation on clinical grounds or from laboratory results, that exotic disease exists.</td>
<td></td>
<td>Notifications as for level 2. National team participate in Amber teleconference. Convene HPT IMT and include by teleconference HPT liaison in local Defra/APHA LDCC. HPT mobilise Oseltamivir supplies.</td>
</tr>
<tr>
<td>Red</td>
<td>4 - As a level 3 plus disease already confirmed in the country or substantial evidence that disease may have entered the country. For example, disease in imported animals originating from a region with confirmed disease.</td>
<td>All susceptible animal(s)/ birds on the premises culled on suspicion and disease confirmed on clinical grounds only without awaiting laboratory results. Samples will be submitted for laboratory diagnosis. First reported case where disease is confirmed. Disease is already in the country and further cases have been confirmed.</td>
<td>Same as for Level 3.</td>
</tr>
</tbody>
</table>
Annex 6: Example health questionnaire for follow-up of exposed persons

Public Health
England

Avian Influenza - Health Questionnaire

Consent to collect information concerning your current health; for this information to be reviewed by the Animal and Plant Health Agency (APHA); and for this information to be passed to your local public health authority:

Avian influenza is primarily a disease of birds. It can, very rarely, be passed from birds to humans. You are being asked to provide the clinical information set out in the questionnaire, to assess whether there is any possibility that you, or any other people that you know of, are suffering from any symptoms of influenza.

The answers that you give will be checked by the official from the Animal and Plant Health Agency (APHA) who has come to your premises today. If you have answered 'yes' to any of these questions they will contact your local public health authority for further advice.

The completed form will be passed to your local public health authority and will become part of their records of this incident.

By completing this form you give consent to the information you provide being checked by APHA, and for APHA to pass this information, and information to enable them to contact you, to your local public health authority.

By providing the information requested on this form to the official from APHA you are helping your local public health authority to respond to any problems that you, your family, friends and contacts might have as quickly as possible.

Should you not wish to give this information to the official from APHA please ask them to arrange for your local public health authority to contact you directly.

Please complete the details overleaf and immediately hand back to one of the APHA team who has issued this form.
**Contact Details and Health Information**

Name & Phone number of the individual for whom the questionnaire is being completed (Please print)

<table>
<thead>
<tr>
<th>First Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Name (Surname)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact Phone Number</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Date (DD/MM/YYYY)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Name and address of GP surgery</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Please state your role on the site</td>
<td>Private Vet / Farmer / Culling staff / Catcher / APHA Staff / Other (specify)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

‘Contact’ is defined below as anyone who has been in contact with poultry, eggs, poultry litter/manure on this premises or have entered any building containing them, within the last 10 days.

**Details of contact with poultry with and without use of PPE**

Personal protective equipment (PPE) includes FFP3 respirator, coverall, goggles, rubber/polyurethane boots and disposable nitrile/vinyl/heavy duty rubber (not latex) gloves. If you have not worn all these, then you should answer “no” to wearing PPE in the questions below.

<table>
<thead>
<tr>
<th>Have you had any contact with the following:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead/sick birds?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birds in the 48 hours before they became sick?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faecal material/ eggs/ litter/ manure from infected birds while the birds were sick?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faecal material/ eggs/ litter/ manure from the sick birds in the 48 hours before they became sick?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you have answered yes to any of the above, when did you start having this contact?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you have answered yes to any of the above, when was the last date you had this contact without wearing PPE?</td>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td>If you have answered yes to any of the above, when was the last date you had this contact while wearing PPE?</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>If you continue to work on the site, please state “Ongoing”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Health Information – if you have ticked Yes to having any of the questions above about contact with sick, dead birds or their faecal material/litter/manure/eggs, please answer the questions below

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you developed a flu like illness (eg high temperature, cough, sore throat, runny nose headache, aching muscles) up to ten days from after your last contact?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Have you developed shortness of breath since up to ten days from after your last contact?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Have you developed sticky eyes(s)/conjunctivitis up to ten days from after your last contact?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are you aware of anyone else associated with this incident who has developed any of these symptoms? If yes provide name and contact number if known, in the space below</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signed:……………………………………… Dated:……………………………………

**APHA STAFF MUST IMMEDIATELY PHONE THE RELEVANT HEALTH PROTECTION TEAM IF ANY ANSWERS TO QUESTIONS 1-4 ARE YES**
Annex 7: Management of persons exposed to Avian Influenza without PPE under the strict approach

The following algorithm applies to the public health management of persons who have been exposed to a confirmed, or possible avian influenza in poultry or wild birds, where adequate PPE was not worn at the time of exposure and the strict approach has been applied.

For information and guidance on dosage for antiviral prophylaxis and treatment, please see: https://www.gov.uk/government/publications/influenza-treatment-and-prophylaxis-using-anti-viral-agents and specific guidance for A(H7N9)

Further information on avian influenza in birds may be found on the Defra website: https://www.gov.uk/avian-influenza-bird-flu

Advice on occupational exposure, including PPE, can be found on the HSE website: http://www.hse.gov.uk/biosafety/diseases/influenza.htm

Follow-up : Active follow-up should be for a period of 10 days following the last exposure (even if PPE was worn). Persons exposed are asked to report any symptoms, including conjunctivitis.

If in any doubt on the correct course of action, discuss with the Influenza Preparedness and Response team on 0208 327 6661 or the NIS Duty Doctor (out-of-hours) on 020 8200 4400.

If any person subject to public health follow-up becomes symptomatic, alert the Influenza Preparedness and Response team on 0208 327 6661 or the NIS Duty Doctor (out-of-hours) on 020 8200 4400.
1. **Category A**: Vet Workers, Farm Workers or equivalent who had direct contact with birds or their faecal material or eggs before the incident was declared (or 48 hrs prior to the onset of clinical signs in birds and not wearing PPE). This may include persons living on the farm if they have had direct contact with potentially infected material.

- **0-7 days since last exposure**: Start oseltamivir prophylaxis, provide information and active follow-up*
- **7-10 days since last exposure**: Oseltamivir not indicated, provide information, active follow-up
- For all symptomatic persons (including conjunctivitis):
  - Initiate oseltamivir treatment promptly
  - Arrange for swabbing and serology testing
  - Alert NIS

2. **Category C**: eg members of the public (or others) inadvertently handling sick or dead birds, or their faecal matter that is confirmed to be infected with AI.

- **0-7 days since last exposure**: Start oseltamivir prophylaxis, provide information and active follow-up*
- **7-10 days since last exposure**: Oseltamivir not indicated, provide information, active follow-up
- For all symptomatic persons (including conjunctivitis):
  - Initiate oseltamivir treatment promptly
  - Arrange for swabbing and serology testing
  - Alert NIS

3. **No direct exposure**: Visitors to the infected premises who have not actually handled birds or their faecal material.

- Provide information, and passive follow-up

4. **Contacts**: Close contacts of people in category 1 or 2.

- Dependent on AI subtype Provide information if requested

5. **No known exposure**: individuals living or working in the protection zone, surveillance zone or risk area not conforming to any of the above categories.

- Provide information if requested
Annex 8: Supplementary guidance relating to people responding to a suspected or confirmed avian influenza incident

On declaration of a confirmed of suspected influenza, the number of persons responding should be kept to a workable minimum.

**Personal Protective Equipment (PPE)**
Anyone involved in the response to an AI incident who will be handling live or dead birds should use the recommended level of PPE. This is covered in guidance from the Health & Safety Executive (HSE):
http://www.hse.gov.uk/biosafety/diseases/influenza.htm

**Logistical arrangements**
HPTs will be aware of the locations of small local emergency antivirals stocks and how to access these. If urgently replenishment is likely to be needed to meet the needs of the incident, this should be raised during normal office hours with Respiratory Diseases Department, National Infection Service, Colindale.

**Seasonal Influenza Vaccination**
Seasonal Influenza vaccination is not recommended as a routine action in the response to avian influenza incidents. This is related to the time required for an individual to be protected from such a vaccination, which is normally longer than an individual’s exposure during the response to a single incident. It should be noted that a seasonal influenza vaccination is not expected to protect against a particular avian influenza strain identified in the incident itself. This advice has been discussed and agreed with the Advisory Committee on Dangerous Pathogens (ACDP).

**Serology**
Unless otherwise advised, serology is not a routine investigation for these incidents and should only be obtained from exposed individuals following prior discussion with the PHE Virus Reference Department.

**Useful Contact Details**
Influenza Preparedness and Response Team (in-hours): 020 8327 6661
Colindale Duty Doctors (out of hours, health professionals only): 020 8200 4400
Virus reference department: 020 8327 6017 or VRD.enquires@phe.gov.uk.
Annex 9: Oseltamivir prophylaxis – factsheet for contacts

AVIAN (BIRD) FLU - ANTIVIRAL MEDICINE

WHY HAVE I BEEN GIVEN THIS MEDICINE?
You have been given a course of antiviral medicine called Oseltamivir (Tamiflu®) because you have come into close contact with poultry suspected or confirmed (delete as appropriate) to be infected with bird flu virus type [insert virus type]. This means that you might have been exposed to the bird flu virus. The risk to your health is low but taking antiviral medicine reduces this risk even further. It will also reduce the risk of you becoming unwell with an ordinary human flu virus, while you are taking the antivirals.

HOW MUCH SHOULD I TAKE?
To work effectively you must take one capsule every day until the course you have been given finishes or until your GP or other health professional tells you to stop.

CAN I TAKE THIS MEDICINE IF I AM PREGNANT?
If you are pregnant or are currently breast feeding, please bring this to the attention of the health professional who gave you the medicines, before you start taking them and they will advise you.

WHAT IF I HAVE ANOTHER MEDICAL CONDITION?
Please tell the health professional who is providing the antiviral medicines about any medical condition or allergies to medicines.

DOES THIS MEDICINE HAVE SIDE EFFECTS?
Not usually and side effects will generally be mild. Side effects have been rarely reported and include nausea and mild stomach ache/upset. Nausea is less likely if the medicine is taken with food.

WHEN SHOULD I START TAKING THIS MEDICINE?
As soon as you get it.

DOES MY FAMILY NEED THIS MEDICINE?
No, only people who are believed to have come into close contact with a bird infected with bird flu need to take the medicine. This is because only people who have handled or have been in very close contact with infected birds are at risk of getting bird flu.

WHAT IF I DEVELOP SYMPTOMS?
If you suddenly develop any of the following symptoms up to 10 days after your last contact with the affected birds or affected [farm/premises] it is important that you contact either your GP or other health professional by telephone as soon as possible. You should refer to this information sheet so they understand why you are taking these medicines.

The most important symptoms to look for are:
- High temperature/fever (temperature of 38°C or more)
- Cough
- Shortness of breath
- Red, sore and sticky eye

Other symptoms may include:
- Body/muscle pain/aches
- Sore throat
- Runny nose

If you need any further advice or have any of the above symptoms and have not been able to contact a health professional, then please contact [INSERT LOCAL HPT DETAILS] quoting [HPZONE REFERENCE]. Outside of office hours you will be put through to [specify details of how to contact out of hours]
Annex 10: letter to GPs for patients who have received antiviral prophylaxis

Dear Colleague

Antivirals provided to your patient in relation to Avian Flu outbreak on xxxxxxxxxx at XXXXX

Your patient detailed below are among those identified as potentially exposed to avian flu during an incident in [specify]. They have been provided with oseltamivir prophylaxis, as follows:

[patient name and address field]

Oseltamivir 75mg OD for ten days PO. (*modify as required*)

You will want to update your records with this information.

This potentially exposed person may contact you in the event that they experience fever, respiratory symptoms or conjunctivitis symptoms, up to ten days after their last exposure to the affected premises.

We recommend that you contact your local Health Protection Team immediately if the patient(s) contact you; your local team will provide advice on how to investigate and manage these patients.

The team can be contacted via: [specify details for team local to GP surgery] quoting [HPZone reference ].

Further information and guidance is also available at: https://www.gov.uk/government/collections/avian-influenza-guidance-data-and-analysis

We thank you for your cooperation.

Yours faithfully

[suggest copy to local HPT duty desk for those not resident in same HPT area]
9. Glossary of abbreviations

ACDP – Advisory Committee on Dangerous Pathogens
AI – Avian Influenza
APHA – Animal and Plant Health Agency
CCDC – Consultant in Communicable Disease Control
CCG – Clinical Commissioning Group
CHP – Consultant in Health Protection
Defra – Department for the Environment, Food and Rural Affairs
DH – Department of Health
DPH – Director of Public Health
EA – Environment Agency
EC – European Commission
EPO – Emergency Planning Officer
ERD – Emergency Response Department
FFP3 – Filtering Facepiece class 3
FSA – Food Standards Agency
GP – General Practitioner
HPAI – Highly pathogenic avian influenza
HPT – Health Protection Team
HSE – Health and Safety Executive
IMT – Incident Management Team
JCC – Joint Coordination Centre
LA – Local Authority
LDCC – Local Disease Control Centre
LPAl – Low pathogenic avian influenza
NDCC – National Disease Control Centre
NIS – National Infection Service
NHS – National Health Service
OIE – the Office International des Epizooties, now the World Organisation for Animal Health, but the acronym was retained.
PPE – Personal Protective Equipment
ROD – Regional Operations Director
VENDU – Veterinary Exotic Notifiable Diseases Unit
VO – Veterinary Officer