WHO guidance on public health measures in countries experiencing their first outbreaks of H5N1 avian influenza

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Background

Outbreaks of avian influenza in poultry, when caused by highly pathogenic viruses of the H5 or H7 subtypes, are of great concern for the agricultural sector and can have considerable economic consequences. Such outbreaks are also of concern for human health. WHO therefore recommends, for certain avian influenza viruses, a series of protective measures aimed at preventing human infections in persons at high risk of exposure. These measures are particularly important during veterinary investigations and extensive and urgent culling operations.

On rare occasions, avian influenza viruses have crossed the species barrier to infect humans. To date, most human cases of avian influenza have been caused by viruses of the H5 and H7 subtypes. Specific strains implicated are H5N1, H7N7, and H7N3. In addition, the low-pathogenic H9N2 strain (Asian lineage) has caused a few human cases of mild respiratory illness.
For several reasons, the highly pathogenic H5N1 virus is of the greatest concern at present. Of all avian influenza viruses known to infect humans, H5N1 has caused the greatest number of cases of very severe disease and the largest number of deaths. Moreover, H5N1 has the potential to start an influenza pandemic. The virus has also proved to be particularly difficult to control in poultry populations and is now considered endemic in parts of South-east Asia.
Measures recommended below aim to protect persons from direct exposure to infected or possibly infected poultry and wild birds and, should this fail, to protect them post-exposure. Persons suspected of infection should be immediately investigated to confirm or exclude diagnosis and to start treatment when indicated. Appropriate measures for infection control, as recommended by WHO, should be used in hospitals treating patients strongly suspected of infection.

The guidance set out below is general and intended for adaptation to specific situations, in line with national health and veterinary polices.

Guidance on containing the disease in poultry

Information relating to animal disease control, quarantine, movement restrictions, culling, diagnosis, and surveillance should be obtained from international veterinary and agricultural agencies:
The OIE avian influenza home page provides links to technical information on a range of issues, including recommended control measures, diagnostic methods and vaccines, methods of humane killing and carcass disposal, and the safety of poultry products moving in international trade.
Standard procedures exist for official reporting of the outbreak to OIE.
The FAO avian influenza home page provides links to additional technical information, including the global control strategy, issues related to food safety and a statement on avian influenza and the role of wild birds.

Support for diagnosis and virus characterization

OIE and FAO reference laboratories for avian influenza provide international support in diagnosis and verification of influenza outbreaks in animals. These laboratories collaborate with WHO reference laboratories.
Because of the intense present concern about both sporadic human cases of severe disease and a possible influenza pandemic, samples and viruses isolated from infected humans must be shared with WHO

reference laboratories for full characterization. As the virulence and transmissibility of influenza viruses may vary, even for viruses of the same subtype, a full risk assessment requires complete virus characterization, including animal trials by WHO reference laboratories. Such an assessment, which can be performed rapidly, can help guide national control strategies. Characterization of viruses allows WHO to prepare up-to-date WHO diagnostic test kits for national reference laboratories. It also helps ensure that work on the development of a pandemic vaccine stays on track.
WHO has issued guidelines for the selection and shipment of viruses and specimens in humans.

Recommended public health actions

General advice

Coordination of services. Multisectoral procedures should be put in place to coordinate the work of agricultural, veterinary and public health services (and any other sectors deemed appropriate in a country context) and facilitate the exchange of laboratory and epidemiological data.

Vaccination for public health purposes.

Health authorities may consider vaccination against seasonal influenza for persons at risk of occupational exposure to the H5N1 virus. Vaccination against seasonal influenza is a public health measure aimed at reducing opportunities for the virus to reassort during co-infection of a human with both avian and currently circulating human influenza viruses. At least some pandemic viruses are known to have emerged following a reassortment event. Vaccination against seasonal influenza will not protect people against infection with the H5N1 virus; no vaccine against H5N1 is presently available.

Protection of persons at risk of occupational exposure [1]

Persons at risk of occupational exposure[2] on affected or at-risk farms should be protected.

Personal protective equipment. Those at risk of occupational exposure on affected or at-risk farms should wear personal protective equipment:

1. Protective clothing, preferably coveralls plus an impermeable apron or surgical gowns with long cuffed sleeves plus an impermeable apron;

2. Heavy-duty rubber work gloves that may be disinfected;

3. Standard well-fitted surgical masks should be used if high-efficiency N95 respiratory masks (NIOSH-certified N-95 or equivalent) are not available. Masks should be fit-tested and training in their use should be provided;

4. Goggles;

5. Rubber or polyurethane boots that can be disinfected or protective foot covers that can be discarded.

Pharmaceutical prophylaxis and treatment.

Those at risk of occupational exposure on affected or at-risk farms can be protected via antiviral prophylaxis (oseltamivir) or post-exposure prophylaxis.[3] Antivirals should be readily available for the treatment of suspected and confirmed cases.

Health monitoring.

Those at risk of occupational exposure should:

1. Be aware of the early clinical signs of H5N1 infection, but also understand that many other common diseases – of far less health concern – will show similar early symptoms.
Most patients infected with the H5N1 virus show initial symptoms of fever (38^{0} C or higher) followed by influenza-like respiratory symptoms, including cough, rhinorrhea, sore throat, and (less frequently) shortness of breath. Watery diarrhoea is often present in the early stages of illness, and may precede respiratory symptoms by up to one week. Gastrointestinal symptoms (abdominal pain, vomiting) may occur and headache has also been reported. To date, one report has described two patients who presented with an encephalopathic illness and diarrhoea without apparent respiratory symptoms.

2. Check for these signs (especially fever) each day during potential exposure and for 14 days after last exposure.

3. Communicate any symptoms to a designated local physician and provide background information on exposure history.

Suspected cases

1. Suspected cases should be placed in isolation and managed according to recommended procedures for infection control.

2. Suspected cases should be sampled according to national or WHO guidelines and samples should be submitted to local or national reference laboratories.

3. Samples and viruses may be shipped to WHO reference laboratories for diagnosis and virus characterization in accordance with national guidelines.

4. If possible (for research aimed at identifying risk factors for infection), serum samples and epidemiological data should be collected from persons who have been exposed. Serological studies should utilize micro-neutralization tests only.

Further guidance from WHO is available in the following areas:

• Surveillance for human cases

• Guidelines for infection control in health care facilities

For urgent matters concerning human health, please contact WHO at influenza@who.int

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[1] Persons at risk of occupational exposure include professional groups such as cullers, poultry workers, and veterinarians.

[2] Occupational exposure can occur when walking through farms with free-roaming H5N1 infected or suspected birds or entering poultry houses with H5N1 infected or suspected birds. Merely passing through an area where an H5N1 outbreak in birds has been confirmed carries a negligible risk of exposure.

[3] Post-exposure prophylaxis is recommended for persons at risk of occupational exposure who did not wear adequate personal protective equipment.