

What it is:

Avian influenza is a highly contagious viral **disease that affects both domestic and wild birds**. It is **caused by influenza A viruses** of the family Orthomyxoviridae. These viruses are classified into subtypes based on two surface proteins: hemagglutinin (H) and neuraminidase (N).

The impact of avian influenza extends beyond its **direct consequences for animal health and economic stability**; it can also pose a **potential threat to human health**. Under specific conditions, avian influenza viruses can occasionally **cross the species barrier, an event known as spillover**, and infect humans. However, confirmed human cases remain sporadic.

The primary public health concern lies in the virus's potential to mutate or undergo genetic reassortment. Such changes may enhance its adaptation to humans, potentially enabling efficient human-to-human transmission.

Categories

Wild aquatic birds, particularly species within the orders **Anseriformes** (e.g., ducks, geese, and swans) and **Charadriiformes** (e.g., gulls) serve as the primary natural reservoirs of avian influenza viruses. Nonetheless, **the virus shows a broad host range and can infect numerous avian species, both domestic and wild**.

In rare instances, infections have also been reported in mammals, including humans, domestic and wild carnivores, and ruminants.



ANSERIFORMES



CHARADRIIFORMES

Origin and Transmission

Avian influenza viruses are naturally present in wild aquatic birds. Transmission primarily occurs through direct contact with infectious secretions, such as faeces or respiratory discharges, or **indirectly via contaminated water sources, feed, or environmental surfaces**.

Transmission to humans can occur through **direct contact with infected birds or contaminated environments**.

Seasonal factors, particularly the migratory movements of wild birds, play a pivotal role in the geographical spread of the virus.

Geographic Distribution

Avian influenza is a **disease of global concern**, with outbreaks documented across multiple continents, including **Africa, Asia, Europe, and the Americas**.

In **Italy**, avian influenza follows a distinct **seasonal trend, with two annual peaks** typically observed **during the autumn and winter months**. The risk of viral incursion is strongly associated with the migratory movements of wild birds, which can act as carriers and introduce the virus into new areas during their overwintering period.

Northern regions such as **Lombardy, Veneto, Emilia-Romagna, and Friuli Venezia Giulia**, are particularly affected due to the presence of extensive wetland habitats, serving as stopover sites for migratory birds, and a high density of commercial poultry farms.

Over the past several years, these regions have reported multiple outbreaks of highly pathogenic avian influenza (HPAI), notably between 2020 and 2022, primarily caused by H5N8 and H5N1 strains. These outbreaks have had significant repercussions on the poultry sector.

Symptoms and Impacts

| ANIMALS | HUMANS |
|---|---|
| <p>In avian species, the disease's clinical presentation varies depending on the viral serotype involved and the susceptibility of the affected species.</p> <p>In wild birds, especially those serving as natural reservoirs, avian influenza infection is often asymptomatic or associated with mild clinical signs, contributing to the silent dissemination of the virus.</p> <p>In contrast, domestic poultry, especially turkeys, are markedly more susceptible to the infection.</p> <p>Low pathogenic avian influenza (LPAI) in poultry may result in mild or subclinical presentations, whereas high pathogenic avian influenza (HPAI) leads to severe and acute manifestations, such as depression, anorexia, decreased egg production, edema, respiratory distress, and high mortality rates.</p> | <p>Human infections with avian influenza viruses may present with mild upper respiratory symptoms and non-specific influenza-like illness, including fever, muscle aches, conjunctivitis, sore throat, and cough. Severe cases may result in complications such as pneumonia, acute respiratory distress syndrome, circulatory collapse, and, in rare instances, death.</p> <p>Occupational exposure places certain groups at higher risk, particularly poultry farmers, avian industry workers, and veterinarians.</p> |

Preventive Measures

Effective prevention of avian influenza relies on the implementation of strict **biosecurity protocols** at all levels of poultry production, including:

- **Prevention of contact** or ensuring segregation between domestic poultry and wild bird populations.
- **Maintaining high hygiene standards** within poultry facilities, including routine cleaning and disinfection of poultry houses, drinking systems, and feeding equipment.
- **Controlling the movement of personnel, vehicles, and equipment within and between farms.** This should include access control, disinfection procedures, and maintaining visitor logbooks to minimise the risk of virus introduction and spread.
- **Immediate reporting of suspected cases** to veterinary authorities for prompt investigation and response.
- **Proper disposal of waste materials**, including manure, litter, carcasses, and any potentially contaminated equipment.
- **Vaccination of poultry** where deemed appropriate.
- For humans, the use of **personal protective equipment** is essential when handling potentially infected animals or working in contaminated environments.

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