



Tikrit University  
College of Veterinary Medicine

# *Avian influenza*

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Lecturer name: Assist. Prof.

Abduljabbar M. Hussein

Academic Email:

abduljabbar1981@tu.edu.iq



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Lecturers link

## Avian influenza

### Definition:

It's a highly contagious viral infection caused by the influenza virus (AI) Type "A", which can affect several species of birds (Chickens, Turkeys, Quails, Guinea fowl, etc.), as well as Pet birds and Wild birds.

### Influenza:

The term "influenza" originally referred to epidemics of acute rapidly spreading catarrhal fevers of humans caused by viruses in the family *Orthomyxoviridae*.

### Synonyms:

Fowl plague (most common), Fowl pest, Fowl disease, and Avian influenza A.

### Historically:

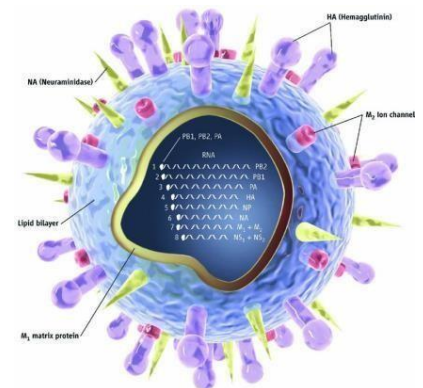
At the late 1870 A.D. subtype H7 has been caused poultry losses in many parts of the world. Some of farms in Kurdish Iraq became infected with the H5 subtype virus in January 2006.

### Etiology:

Avian influenza viruses are classified in the family *Orthomyxoviridae*, genus Influenza virus A. Virions are typically spherical to pleomorphic but can be filamentous. The range of diameter from 80–120 nm, but the filamentous forms can have lengths up to several hundred nm. The surface is covered by two types of glycoprotein projections (10–14) nm in length and (4–6) nm in diameter:

- 1) 16 Mushroom-shaped of haemagglutinin (HA).
- 2) 9 Rod-shaped of neuraminidase (NA).

The nucleocapsid is helical. The viral genome is composed of eight segments of single-stranded, negative-sense RNA that code.



AI viruses can be classified into two categories: Low pathogenic (LPAI) and High pathogenic (HPAI) forms based on the severity of the illness. HPAI can cause the increase the mortality rate in birds.

**Susceptibility:**

Domestic birds, wild birds, cat and human .

**Incubation period:**

The incubation period in poultry is one to seven days.

**Modes of transmission:**

1. The disease can be spread through Wild birds serve as reservoirs.
2. Infected birds excretions .
3. Through contaminated clothing, , equipment, feed, and water.
4. Rodents , dogs and cats which may act as mechanical vectors.

**Persistence of AI virus:**

Avian influenza virus can survive for at least 35 days at 4°C in manure. The virus can survive for up to 23 days if refrigerated and for several days in carcasses at ambient temperature.

**Disinfection:**

The influenza viruses are inactivated by use the substances ethanol, formalin, formaldehyde, phenols , acids and can also be inactivated by heating to 56°C for 60 minutes.

**Clinical Signs:**

The clinical signs appearance depend on host species, age, concurrent infections, acquired immunity and environmental factors.

**The main signs of HPAI in poultry are:**

1. Depression and anorexia.
2. Paralysis of the wings and torticollis.
3. Decreased egg production.
4. Respiratory signs (rales, sneezing, and coughing).
5. Swelling of the face
6. Mortality may reach up to 100 %.
7. Sudden death can occur without any previous signs.
8. Edematous to necrotic combs and wattles.

**The main clinical signs of LPAI:**

1. Respiratory signs (coughing, sneezing, rales, rattles, and excessive lacrimation).
2. Decreased egg production
3. Ruffled feathers, emaciation, diarrhea and lethargy.

**P.M. Lesions:**

1. May be observed Fibrinous inflammation in the air sacs peritoneal cavity
- 2- The inflammatory exudates may be found in the oviducts of laying birds, which lead to decrease calcium deposition within the egg shells.
- 3- Present the necrotic foci in spleen, heart, liver and kidney.
4. deposition the urate crystal on the kidney
5. The bursa and thymus are usually atrophic.
6. Present hemorrhages on the serosal and mucosal surface of viscera including the proventriculus.

**Avian Influenza Diagnosis:**

**1. Methods for the isolation and identification of influenza**

**Viruses:** Chicken embryos, 9–11 days old, are inoculated via the allantoic cavity. The death of inoculated embryos within 24 hours after inoculation usually results from bacterial contamination. The presence of virus is demonstrated by haemagglutination test using washing chicken erythrocytes.

**2. Polymerase chain reaction (PCR):**

This technology has accelerated influenza diagnosis and field monitoring.

**3. Serological examinations:**

Serologic tests are used to demonstrate the presence of AI specific antibodies like ELISA ,HA and HI tests

**Prevention of infection:**

1. Don't used equipment or vehicles from other farms.
2. Don't use same vehicles for transporting birds, feeds, or waste products.
3. Clean, Protective clothing and foot wear must be worn in the poultry farm.
4. Prevent enter the wild birds ,other animals and rodents in to the poultry farm.
5. Cleaning & disinfect all houses & equipment before and after every cycle.

**Control of AI outbreaks:**

There is no treatment or vaccination but controlled by eradication techniques.

**Differential diagnosis:**

Avian influenza must be distinguished from Newcastle disease , Mycoplasma infections (Chronic respiratory disease) and Fowl cholera