

AVIAN INFLUENZA (FOWL PLAQUE)

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.

ETIOLOGY

Avian influenza viruses are classified in the family **Orthomyxoviridae**, genus **Influenza virus A**. Virions are typically **spherical** to **pleomorphic** but can be **filamentous**. Individual virions range in diameter from **80–120 nm**, but the filamentous forms can have lengths up to several hundred nm.

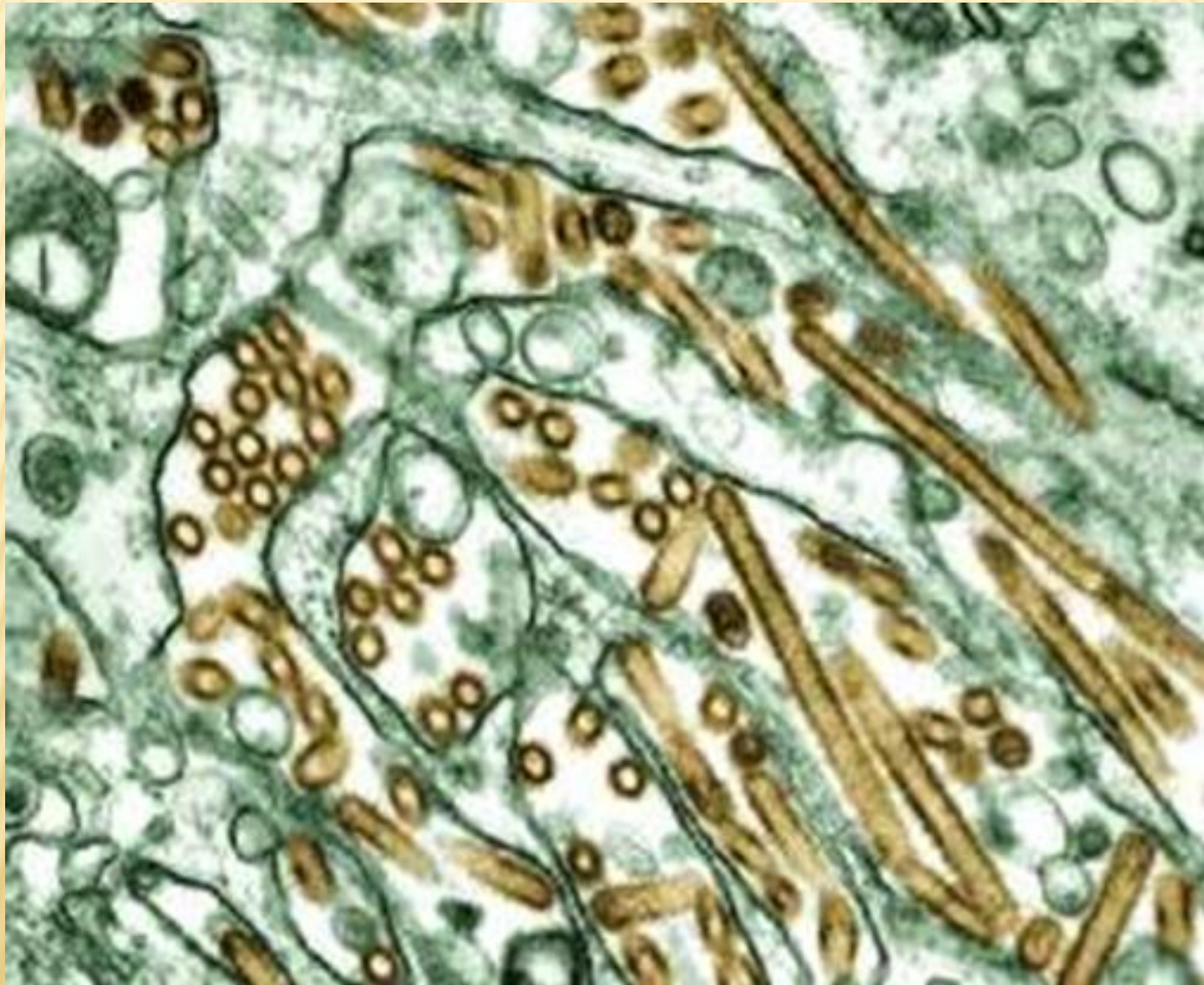
The surface is covered by two types of glycoprotein projections

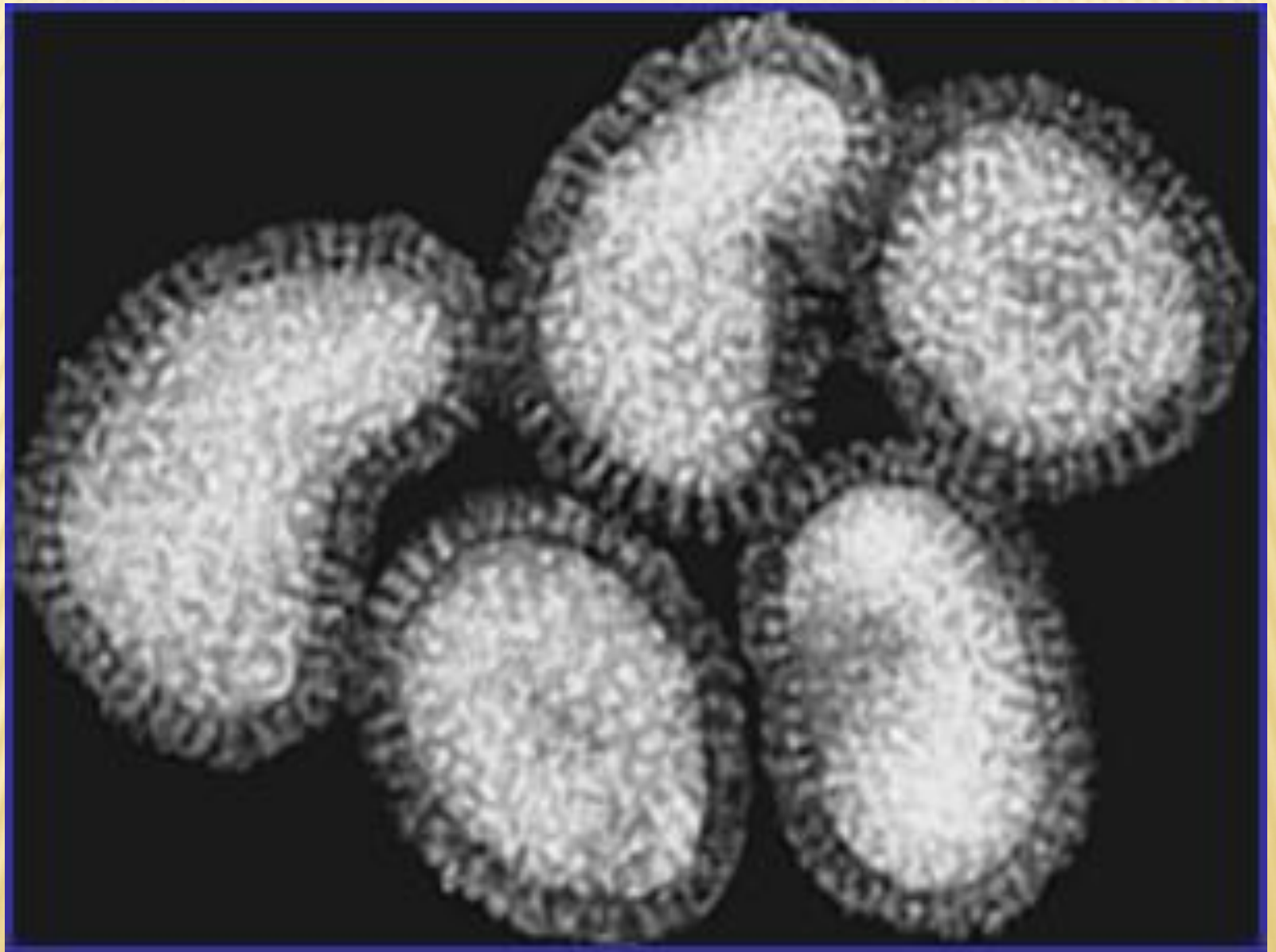
1) 16 Mushroom-shaped trimmers of haemagglutinin (HA).

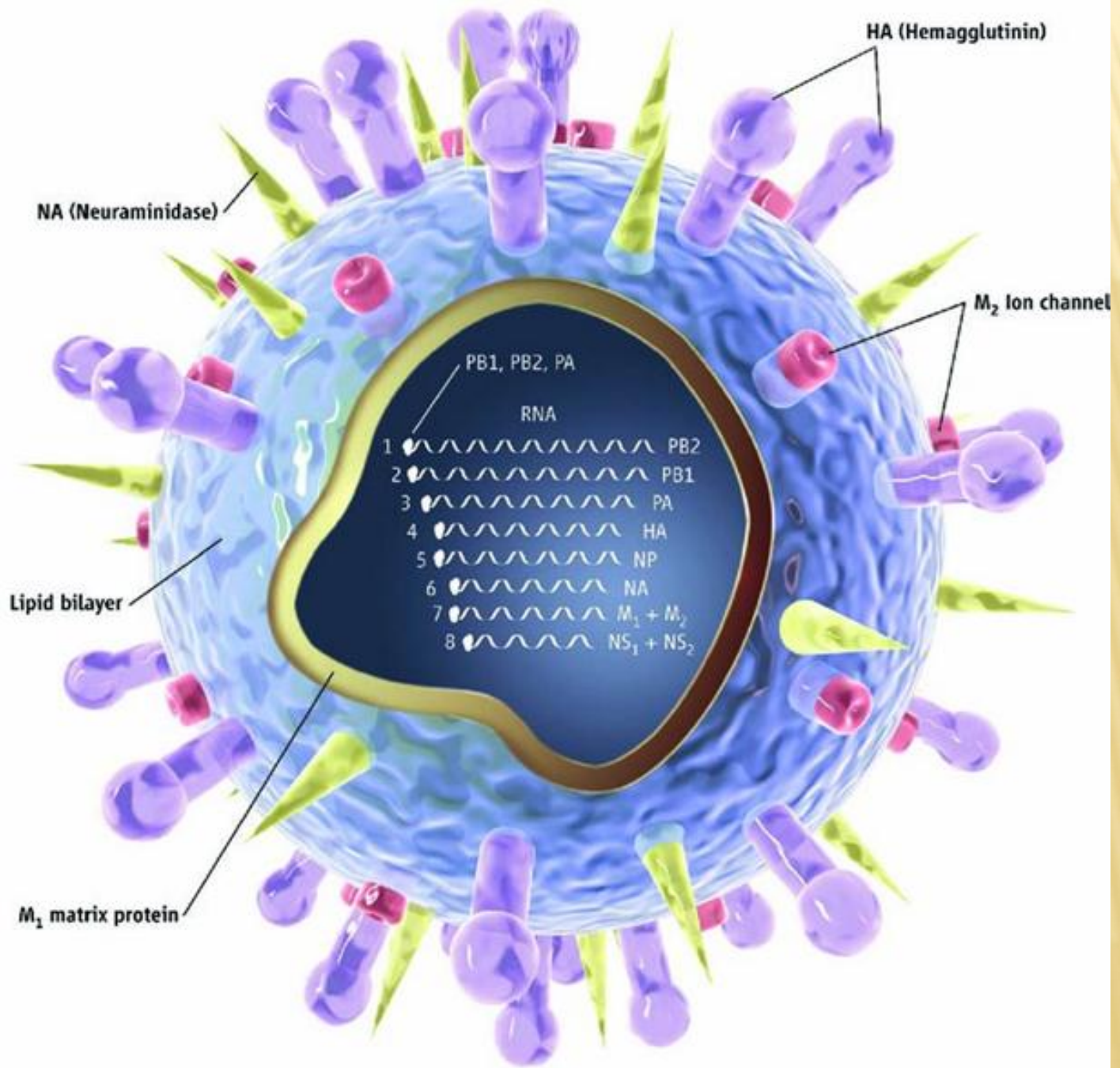
2) 9 Rod-shaped tetramers of neuraminidase (NA). The nucleocapsid is helical. The viral genome is composed of eight segments of single-stranded, RNA.

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

Electron micrograph of avian influenza H5N1 virus







HISTORICALLY:

H7 subtype which has caused poultry losses since the late 1870 A.D. in many parts of the world. Recent epizootic in many parts of the world were caused by H5 subtype viruses. In Iraq at January 2006 H5 subtype virus infected farms in Kurdish northern Iraq.

INCUBATION PERIOD

The incubation period in poultry is one to seven days.

SUSCEPTIBILITY

Domestic birds, wild birds, cat and human .

METHODS FOR TRANSMISSION

1. The disease can be spread to birds through Wild birds serve as reservoirs.
2. AI virus is excreted from the nares, mouth, conjunctiva, and cloaca of infected birds into the environment because of virus replication in the respiratory, intestinal, renal, and/or reproductive organs.
3. Through contaminated clothing, foot wear, vehicles, equipment, feed, air and water.
4. Human transmission has occurred by contact with heavily contaminated environments.

PERSISTENCE OF AI VIRUS:

Environmental conditions have a marked effect on virus survival outside the bird. Avian influenza virus can survive for at least 35 days at 4°C in manure and can be isolated from lake water where water fowl are present. 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 susceptible to a variety of chemical disinfections including sodium hypochlorite, 70% ethanol, oxidizing agents, quaternary ammonium compounds, formalin, formaldehyde, phenols and acids. Physical factors such as heat, extremes of pH. They can also be inactivated by heating to 56°C for minimum 60 minutes.

Clinical signs FOR

HPAI

1- SUDDEN DEATH



2. PARALYSIS



3- TORTICOLLIS



4-SWELLING OF THE FACE.



5- RUFFLED FEATHERS



6- EDEMA AND NECROSIS OF COMB AND WATTLES



7-CYANOTIC THE COMB AND WATTLES OF AN INFECTED CHICKEN ON THE LEFT COMPARED TO A NORMAL CHICKEN ON THE RIGHT.



8- SWOLLEN, CYANOTIC THE COMB AND WATTLES



9- HUDDLING THE BIRDS



I. Capua

CLINICAL SIGNS OF LPAI:

1. Respiratory signs(coughing, sneezing, rales, rattles, and excessive lacrimation.).
2. LPAI virus infections suppressed T-cell function.
3. Decreased egg production in layers and breeders hens.
4. Huddling the birds , ruffled feathers, depression, emaciation, diarrhea, decreased feed and water consumption.

POST MORTEM LESIONS (P.M. LESIONS)

1-HEMORRHAGES OF THE TRACHEA



2-SWELLING OF THE FEET AND MAY BE OBSERVED WHICH RESULTS FROM SUBCUTANEOUS EDEMA AND MAY BE ACCOMPANIED BY PETECHIAL HEMORRHAGES.



3- HEMORRHAGES ON THE MUCOSAL SURFACE OF THE PROVENTRICULUS



4-Heamorrhagh in the intestines



5-NOTE HEMORRHAGES AND EDEMA AROUND THE HEART



AVIAN INFLUENZA DIAGNOSIS

1. METHODS FOR THE ISOLATION AND IDENTIFICATION OF INFLUENZA

Chicken embryos, 9–11 days old, are inoculated via the allantoic cavity with approximately 0.2 ml of sample. In some cases, yolk sac inoculation has yielded viruses when allantoic cavity inoculation has failed. The death of inoculated embryos within 24 hours after inoculation usually results from bacterial

2. DIRECT DETECTION OF AI:

The direct demonstration in avian formed by the specimens and allantoic fluid of inoculated embryonating chicken eggs.

3. REVERSE TRANSCRIPTASE POLYMERASE CHAIN REACTION:

The RRT-PCR has a 3 hour test time and a sensitivity and specificity comparable to virus isolation procedures. This technology has accelerated influenza diagnosis and field monitoring.

4-SEROLOGY:

1- AGPT.

2-ELISA.

3-HI.

PREVENTION OF INFECTION:

1. Provide a security or decontamination area.
2. Better not used equipment or vehicles from other farms.
3. Don't use same vehicles for transporting birds, feeds, equipment or waste products.
4. Clean, Protective clothing and foot wear must be worn in the farm.
5. Keep wild birds off the poultry houses .
6. Keep other animals out of the farm.

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7. Prevent inter the rodents to the farm .
 8. Proper disposal of damaged eggs, dead birds, litter or manure.
 9. Cleaning & disinfect all houses & equipment before and after every cycle or phase.

IMMUNIZATION:

Immune response against viral internal proteins has not been shown to prevent clinical signs or death but may shorten the period of virus replication and shedding. However, the mechanism of this limited protection is unknown but may be the result of cell-mediated immunity

CONTROL OF AI OUTBREAKS:

There is nothing that can be done to control the infection in wild birds. There is no treatment or vaccination but controlled by eradication techniques.

DIFFERENTIAL DIAGNOSIS:

Newcastle.

Mycoplasma infection.

Fowl cholera.