

PRECAUTIONS FOR HANDLING SUSPECTED BIRDS

Stringent health precautions are essential during handling of suspected ailing /dead birds for sample collection as the disease is highly contagious for humans.



1. The carcass and the necropsy table surface should be washed with a disinfectant.
2. Always wear good gloves.
3. Do not cut or puncture the skin of hands.
4. Do not inhale dust or aerosols from tissues or faeces.
5. Wear a fine particle respiratory mask to prevent inhalation of contaminated dust.

DIAGNOSIS

1. Isolation and identification of virus

- Inoculation of 9-11-day-old embryonated chicken eggs followed by:
 - o Demonstration of haemagglutination
 - o immunodiffusion test to confirm the presence of influenza A virus

2. Serological tests

- HA and HI tests
- Agar gel immunodiffusion
- ELISA
- RT-PCR
- Real time PCR



DIFFERENTIAL DIAGNOSIS

- Acute fowl cholera
- Velogenic Newcastle disease
- Respiratory diseases, especially infectious laryngotracheitis

TREATMENT

Tami Flu (Oseltamivir phosphate) by Roche is the drug of choice for the treatment of Highly Pathogenic Avian Influenza. Relenza (Zanamivir) is also used. Amantadine hydrochloride is effective for human prophylaxis.



CONTROL MEASURES

The Animal Husbandry department insists on the following control measures to prevent the spread of the influenza pandemic.

- o Avoid the contact between wild birds (migratory) and domestic birds.
- o Discourage co-farming of pigs, ducks, turkeys/ chickens
- o Restrict entry of birds from outside sources
- o Regulate entry of people, animals, birds, vehicles etc
- o Dead birds &spoiled eggs should be buried deep with proper disinfection
- o Susceptible flock, if any, should be quarantined.
- o Contact - Chief Disease Investigation Office and Regional Disease Diagnostic Laboratories in suspected cases.



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DEPARTMENT OF ANIMAL HUSBANDRY

AVIAN INFLUENZA



CHIEF DISEASE INVESTIGATION OFFICE
PALODE

AVIAN INFLUENZA

Avian influenza is a disease of viral etiology that ranges from a mild or even asymptomatic infection to an acute, fatal disease of chickens, turkeys, pheasants, quail, ducks, geese, and guinea fowl, as well as a wide variety of other birds.



Migratory waterfowls are considered to be the natural reservoir for this disease. Avian influenza viruses do not usually directly infect humans or circulate among humans. Type A influenza viruses can infect several animal species, including birds, pigs, horses, seals and whales.

ETIOLOGY

Virus family: Orthomyxoviridae.
Genus : Influenzavirus Type A.

Influenza A viruses can be divided into subtypes on the basis of their surface proteins - Hemagglutinin (HA) and Neuraminidase (NA). There are 15 known H subtypes and 9 neuraminidase sub types. To date, all highly pathogenic isolates have been influenza A viruses of subtypes H5 & H7.

AI viruses can be classified into low pathogenic (LPAI) and highly pathogenic (HPAI) forms based on the severity of the illness they cause. Most strains are LPAI and are harmless. However, some LPAI virus strains are capable of mutating under field conditions into HPAI viruses, which cause more illness in infected birds. Highly pathogenic avian influenza viruses have periodically occurred in recent years in Australia (H7), England (H7), South Africa (H5), Scotland (H5), Ireland (H5), Mexico (H5), Pakistan (H7), & United States (H5).

POTENTIAL FOR AN INFLUENZA PANDEMIC

Due to lack of genetic proof reading ability, surface antigens of Influenza virus changes very easily. By "Antigenic drift"- the tiny errors occurring during replication- becomes permanent changes in the genetic make up of the virus.



So also Antigenic shift or gene swapping property of the virus can produce a mutant strain. Such strains are capable of causing a pandemic. As the virus is a new strain, human immune system will not have any immunity to this new strains and vaccination is ineffective.

So far 3 pandemics of Influenza have occurred worldwide. Spanish flu in 1918 with H1N1 strain wiped out about 40 -50 million people from the surface of earth. Asian flu with H2N2 strain in 1957 killed about 2 million people and the Hong Kong flu with H3N2 strain in 1968 caused the death of about 35, 000 people.



PROPERTIES OF THE VIRUS

Temperature : Inactivation by 56°C/3 hours; 60°C/30 min
pH : Inactivated by acid pH
Chemicals : Inactivated by oxidising agents, sodium dodecyl sulphate, lipid solvents, β -propiolactone
Disinfectants : Inactivated by formalin and iodine compounds
Survival : Remains viable for long periods in tissues, faeces and also in water

TRANSMISSION

Exposure of poultry to migratory waterfowl and the international movement of poultry, poultry equipment, and people pose risks for introducing Avian Influenza into a country. Once introduced, the disease can spread from bird to bird by direct contact. Virus can also spread through equipment, vehicles, egg flats, crates, manure and people whose clothing or shoes have come in contact with the virus.



Certain water birds are the natural reservoirs of influenza virus. Infected birds carry the virus in the G.I. tract and the organism is shed through saliva, nasal secretions and feces. Airborne transmission is also possible. Birds are infected via instillation of virus into the conjunctival sac, nares or the trachea however; fecal-to-oral transmission is the most common mode of spread.

INCUBATION PERIOD

Incubation period ranges from a few hours to 3 days. It depends up on the dose of the virus, route and species affected.

MORBIDITY AND MORTALITY

Prognosis is poor. Morbidity and mortality rates may be near 100 percent within 2 to 12 days after the first signs of illness. Survived birds are usually in poor condition.

CLINICAL SIGNS IN POULTRY

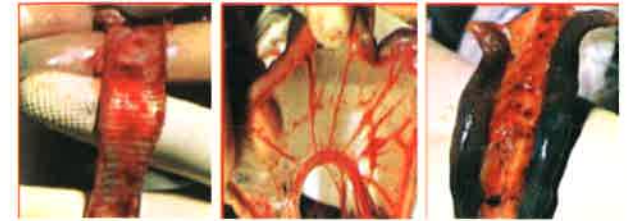
Birds affected with all forms of AI may show one or more of the following signs:

- Sudden death without clinical signs
- Lack of and weakness

- Decreased egg production
- Soft-shelled or misshapen eggs
- Swelling of the head, eyelids, comb, wattles and hocks.
- Purple discoloration of the wattles, combs and legs.
- Nasal discharge, coughing, sneezing
- Diarrhea and incoordination.

PM LESIONS

- Lesions may be absent in cases of sudden death



- Dehydration and severe congestion of the musculature
- Subcutaneous oedema of the head and neck area
- Nasal and oral cavity discharge
- Severe congestion of conjunctivae, sometimes with petechiae
- Excessive mucous exudate in the lumen of the trachea, or severe haemorrhagic tracheitis
- Petechiae on the inside of the sternum, on the serosa and abdominal fat, serosal surfaces and in the body cavity
- Severe kidney congestion, sometimes with urate deposits in the tubules
- Haemorrhages and degeneration of the ovary
- Haemorrhages on the mucosal surface of the proventriculus, particularly at the juncture with the gizzard
- Haemorrhages and erosions of the gizzard lining
- Haemorrhagic foci on the lymphoid tissues in the intestinal mucosa

In turkeys the lesions are similar to those in chickens, but not as marked. Ducks may not show any clinical signs or lesions

MATERIALS TO BE COLLECTED

- Throat swabs
- Cloacal swabs
- Fresh faecal samples
- Serum samples
- Tissue samples

Collect fecal samples/ Cloacal swabs and throat swabs in Phosphate Buffered Saline (PBS) of pH 7.2 - 7.4 and transport on either frozen gel packs/ dry ice in a thermo cool box to the diagnostic centre.

