

Avian Influenza

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² and Al Dam²

Species

Avian influenza is an important viral disease of birds.

All species are susceptible, but chickens, turkeys, ratites and game birds may be clinically affected.

Recent highly pathogenic strains have caused mortality in wild birds including herons, ducks and swans.

Pigeons have some degree of natural resistance but disease has been reported in the birds as well.

In South Africa several significant outbreaks of AI in commercial ostrich farms have been reported.

Ducks and many species of water birds rarely show clinical disease with most strains of avian influenza virus, but may carry the virus and are the main reservoir for influenza viruses in nature.

Status in Canada

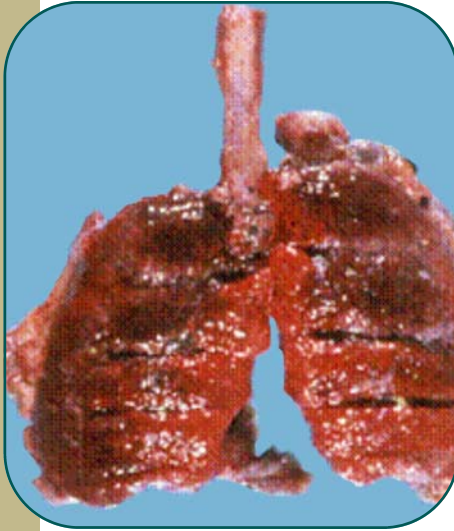
Highly Pathogenic AI (HPAI) is rare in poultry, but when it does occur it is a disease of major economic importance. HPAI is a federally Reportable Disease in Canada, the U.S.A. and most economically developed countries. A diagnosis of HPAI dramatically affects export and international trade.

Beginning in 2004 and continuing until the present time the bird flu has caused major epidemics through Asia and Europe that have cost the poultry industry billions of dollars and is responsible for the loss of over 200 human lives.

A 2002 AI epidemic devastated the poultry industry in British Columbia with over 19 million birds eradicated and great loss to Canadian poultry exports.



*BELOW:
Dark, red lungs
in a turkey with
pneumonia due
to AI*



Etiology

AI is caused by an Orthomyxovirus. There are many strains of the virus and they are classified by unique antigens on the surface of the virus (hemagglutinin = H and neuraminidase = N). There are 16 known H antigen types and 9 neuraminidase types that can occur in any combination. Viruses with H5 and H7 antigen types must be immediately reported to the federal government as these are the most important types that cause high death losses in poultry.

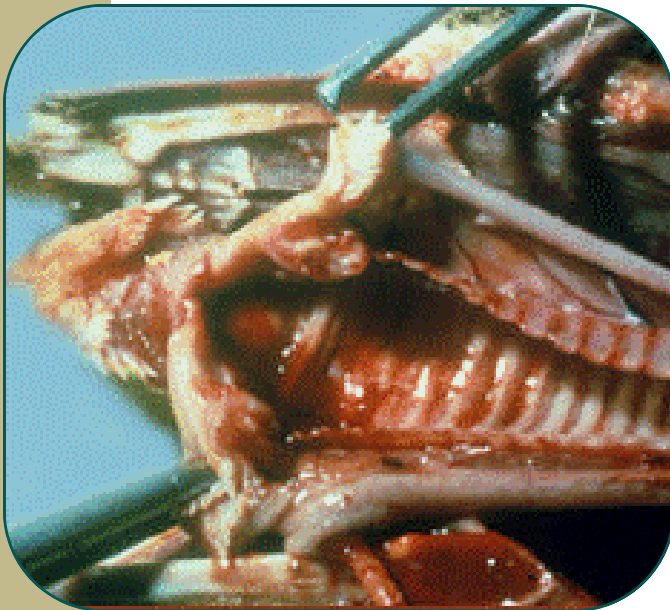
All AI viruses isolated from outbreaks are classified based on embryo and day old chick pathogenicity tests that are standardized across the world. Any avian influenza virus isolated in Canada that meets the international standards for high pathogenicity virus will trigger a vigorous investigation by CFIA. Low pathogenicity viruses also trigger an investigation but eradication may not be required.

Avian influenza viruses have are able to readily mutate and change very quickly. The H7 and H5 types have the ability to infect species other than birds. People can be infected and can become clinically ill and even die. The World Health Organization is concerned that the current H5 viruses that can infect people may mutate and become better adapted to humans perhaps leading to serious human disease.

The Disease

Mild strains of AI (Low Pathogenicity - LPAI) generally cause respiratory signs such as sneezing, coughing, swollen sinuses and pneumonia. In turkeys and game birds LPAI may cause marked drops in egg production without other clinical signs. Ducks may be infected and shed virus but show no clinical signs. Pigeons generally show no clinical signs either, although mortality has been reported in pigeons with the H5N1

*RIGHT:
Red,
inflamed
trachea
(windpipe)
in a chicken
with AI.*



strain in Asia. Low path AI strains have been identified in ostriches in South Africa.

Highly pathogenic strains of AI in poultry cause high mortality and clinical signs ranging from severe depression to severe respiratory disease, discoloration and swelling of combs wattles and legs.

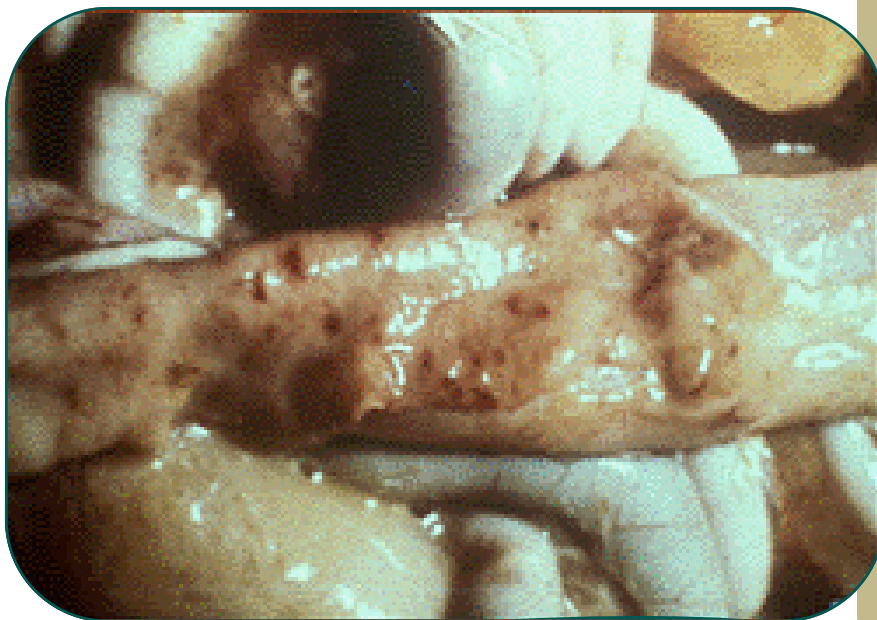
Lesions at necropsy may be found in many organs and can resemble those of Newcastle disease. The trachea may be red and inflamed with an exudate in the lumen and the lungs may be firm, red and hemorrhagic. There may be ulceration of the proventriculus and gizzard and there is often hemorrhage and necrosis of the lymphoid tissue in the cecal tonsils and spleen.



Dark cyanotic combs due to poor blood circulation.



ABOVE: Necrosis and hemorrhage of the cecal tonsils in a turkey with AI



LEFT: Areas of necrosis and hemorrhage scattered through the intestinal tract of a bird with AI



Treatment

None. Contact your veterinarian immediately if sudden increases in mortality occur particularly if respiratory signs are present. Your veterinarian will know the best process for submitting samples to a diagnostic laboratory. Upon suspicion of HPAI the federal government (CFIA) must be notified immediately. This will be done through your veterinarian or diagnostic lab.

Prevention

There are no vaccines commercially available in Canada. Canada and the USA have policies requiring eradication of the disease and so do not allow vaccination except in special circumstances.

Wild birds particularly waterfowl and shore birds are the natural reservoir for all strains of AI viruses. Good biosecurity, including making sure your birds have no contact with wild birds, avoiding the use of open water sources for drinking water for your birds, quarantine and observation of your birds after races or shows and strict visitor control are all important ways of reducing risk of AI (see principles of biosecurity fact sheets).

Proper handling of all mortality combined with early detection and diagnosis will help save your industry from the devastation of AI.



UNIVERSITY
OF GUELPH¹

Ontario²

CONTACT

OMAFRA's
Agricultural
Information
Contact Centre:
1-877-424-1300