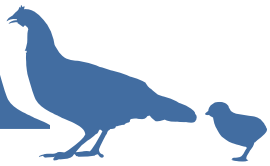
Highly Pathogenic Avian Influenza (HPAI)



Importance

- Worldwide there are many strains of avian influenza (AI) virus that cause varying amounts of clinical illness in poultry. AI viruses are classified into low pathogenic avian influenza (LPAI) which causes little or no clinical signs in infected birds, and highly pathogenic avian influenza (HPAI) which is a serious and often fatal disease in birds. LPAI may mutate into HPAI, so outbreaks of any type of AI need prompt attention.
- Two surface antigens, hemagglutinin (H) and neuraminidase (N) are used to classify the viruses into serotypes. Most of the isolates in recent outbreaks have been H5 or H7 viruses.
- Morbidity and mortality may approach 100%.
- HPAI is a zoonotic disease and human deaths have been reported.
- Outbreaks of HPAI (H5N1) in SE Asia in late 2003 to early 2004 were historically unprecedented in their geographical scope, international spread and economic consequences for the agricultural sector. Twenty-three humans died and over 100 million birds died or were culled as a result.
- New outbreaks of HPAI (H5N1) occurred in June 2004 in SE Asia and spread into Eurasia by late 2005, causing both human and bird deaths.

Vaccination

- An inactivated H5 vaccine is licensed in the U.S. for emergency use in outbreaks. Vaccines are costly and do not offer cross protection between the 15 serotypes of AI.

Transmission

- Migratory waterfowl are the natural reservoir for avian influenza.
- Feces and respiratory secretions contain large amounts of virus which can infect new hosts through conjunctiva absorption or the respiratory tract. AI is also spread by aerosol, shared drinking water, and fomites.
- Incubation period is commonly 3-14 days.

Clinical Signs in Poultry

- Avian influenza may affect the respiratory, nervous and digestive systems. Respiratory signs include nasal discharge, coughing and sneezing. Nervous signs may include depression, ataxia and torticollis. Digestive signs may include inappetence and watery diarrhea that progresses from bright green to white.
- Birds affected with any form of AI may show one or more of the following signs: sudden death without clinical signs, decreased egg production, soft-shelled or misshapen eggs, swelling of the head, eyelids, comb, wattle and hocks, and cyanosis of the wattle, comb and legs.

Differential Diagnosis

Exotic Newcastle disease (END), infectious laryngotracheitis and acute bacterial diseases including fowl cholera and *E. coli* infections.

Diagnosis

Definitive diagnosis requires virus isolation and identification in the laboratory. Tracheal or cloacal swabs from live or dead birds, as well as feces, can be used for virus isolation and identification.

Disinfection

Avian influenza viruses are relatively unstable in the environment and are inactivated by extremes in pH, heat, and dryness. In the presence of organic matter, AI virus can be inactivated by aldehydes. After removal of organic matter, several classes of disinfectants will be effective at destroying avian influenza virus: phenolics (e.g. One Stroke Environ), quaternary ammonium compounds (e.g. Roccal), oxidizing agents (e.g. Virkon), and dilute acids (e.g. peracetic acid)

Recommended actions if HPAI is suspected

Contact State and Federal veterinarians immediately.

the Center for Food Security & Public Health
Iowa State University®

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