Department of Animal Science

INFECTIOUS LARYNGOTRACHEITIS (ILT) IN POULTRY: WHAT TO KNOW IF YOUR FLOCK IS AFFECTED

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Infectious laryngotracheitis (ILT) is an acute, highly contagious respiratory disease primarily affecting chickens although peafowl and pheasants are occasionally affected. Turkeys also can become infected with ILT at about 100 days of age (Ou and Giambrone, 2012). Other avian species appear resistant to ILT virus infection (Seddon and Hart, 1936; Hayles et al., 1976; Crawshaw and Boycott, 1982). Infectious laryngotracheitis was one of the earliest diseases described for poultry (1925) (Jones, 2010). However, the disease may have existed in chickens much earlier (May and Tittsler, 1925) and often leads to severe losses in the poultry industry as well as backyard flocks. ILT is caused by a herpes virus (*Gallid herpesvirus, type I*), an enveloped DNA virus. Various strains show marked differences in virulence. Respiratory symptoms may therefore range from mild to severe. Flocks affected by ILT may show various levels of mortality along with reduced egg production in laying flocks. Like all herpes viruses, the **ILT virus can reside for long periods of time in the nerve tissue of the host** following initial inoculation. While in this state of latent infection, birds will not exhibit signs of the disease, nor are they capable of shedding the virus. Stressful events such as movement of birds or the onset of lay can trigger reactivation of the virus and cause disease and viral shedding. Flocks infected with ILT are assumed to be lifelong carriers of the virus and a source of future infections for other flocks (Dufour-Zavala, 2008). Humans are not affected by the disease, so **you cannot catch ILT from your chickens**.

What to know

Infectious laryngotracheitis is **present worldwide in areas where poultry production takes place**. It has been shown that the ILT virus can survive up to three weeks on carcasses and fomites (Dufour-Zavala, 2008). The ILT virus spreads through secretions or droplets from infected birds coming in contact with the respiratory tract, oral cavity or eyes of naïve birds (Bagust and Johnson, 1995; Hidalgo, 2003). There is evidence that indicates that ILT outbreaks

in unvaccinated broiler flocks could occur **if ILT infected backyard flocks are within the radius of a mile** (Garcia et al., 2013). Backyard flock keepers that subject their birds to stressful situations (i.e., moving birds back and forth to trade shows, fairs or expositions) may reactivate a latent ILT virus leading to viral shedding to the environment (Hughes et al., 1989). The ILT virus can be shed into the environment in oropharyngeal contents, feces and as feather dander (Perez-Contreras et al., 2021). Given the possibility of ILT virus circulation within backyard flocks, contamination of the environment and lack of immune protection of the majority of commercial flocks, the **risk of ILT outbreaks in naïve chickens is substantial unless biosecurity measures are optimum** (Barboza-Solis, 2021).

Sources of ILT virus are clinically affected chickens, latent carriers, contaminated dust, litter, beetles, drinking water and fomites (Bagust et al., 2000; Ou et al., 2011; Ou et al., 2012). The **ILT virus can remain active in biofilm of drinking water lines** and subsequently be transmitted to susceptible birds (Ou et al., 2011). Biofilm is a sticky substance produced by bacteria, which can render microorganisms resistant to some routinely used sanitizers. Commercial sodium hydrogen sulfate (PWT®, Jones-Hamilton Co., Walbridge, OH) and hydrogen peroxide (Proxy-Clean®, Melissa, TX) were able to inactivate ILT virus in the water lines (Ou et al., 2011). Darkling beetles in poultry houses are possible sources to transmit ILT virus. Ou et al. (2012) found that in ILT-infected houses, **darkling beetles contained live virus at least 42 days after the disease outbreak**. Windborne transmission between farms has also been a source of ILT virus spread (Johnson et al., 2005).

Incubation of the virus in the field may take 1-2 weeks (6-14 days) from the introduction of the virus to the appearance of the first clinical signs. For infections involving low pathogenic strains of ILT (Figure 1), clinical signs may be similar to those of many other respiratory diseases of poultry. Swollen eyelids, watery eyes, swollen sinuses, oral and nasal discharge, along with coughing and sneezing may be common. Birds with a severe form of ILT (Figure 2) show labored, open-mouth breathing along with violent coughing and sneezing often accompanied by bloody mucus and may extend their neck to improve air transit through the mucus-filled trachea while shaking their heads and making a loud wheezing noise. Often, blood may be seen on the beak and feathers of some birds and may be apparent on the walls of the chicken house or coop from the head shaking. **Birds showing open mouth breathing and head shaking accompanied by bloody mucus usually do not survive, while those with mild symptoms are more likely to recover but will remain latent carriers**. Decreased egg production and mortality will vary depending on the pathogenicity of the strain. Birds that survive generally recover after two weeks. Most signs reflect respiratory distress and general ill health and can include:

- Difficulty breathing
- Sneezing
- Coughing
- Swollen sinuses
- Watery eyes
- Nasal discharge
- Lethargy
- Head shaking/slinging blood-tinged mucus
- Decreased appetite
- Decreased egg production
- Increased mortality

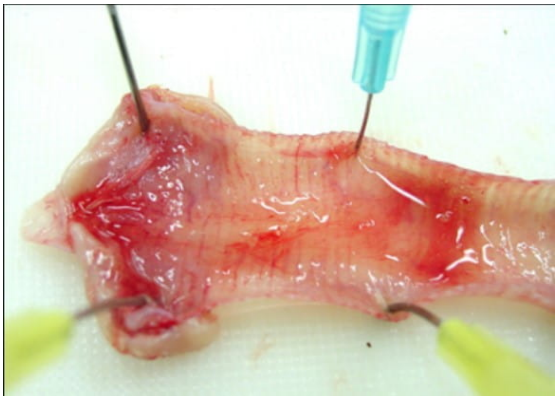

Figure 1. Trachea of bird with mild form of ILT. Source: Merck Veterinary Manual

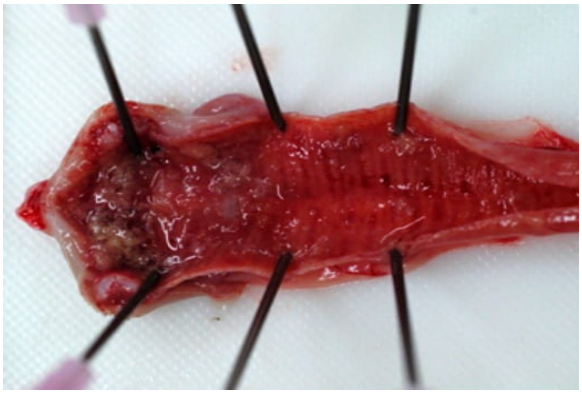

Figure 2. Trachea of bird with severe form of ILT. Source: Merck Veterinary Manual.

What to do

Understand that the **severity of the clinical signs and lesions is related to the mortality** that will occur in the flock. Mild forms of the disease will result in low mortality (0.1-2 percent). Severe forms of ILT result in much higher and more variable mortality rates (5-70 percent), with the average being around 10-20 percent. **Control should focus on management practices, including strict biosecurity**. There are vaccines for ILT but due to vaccination potential to cause disease, veterinary supervision is strongly recommended and should be consulted before the decision is made to go this route. It is recommended that ILT vaccines be used only in endemic areas where ILT is a regularly occurring problem (Ou and Giambrone, 2012). Check with the state veterinarian in your state regarding the use of ILT vaccines because the way in which ILT is managed and controlled varies from state to state. Both natural infection and vaccination have been shown to produce "carrier" birds, making it extremely important that susceptible flocks are not exposed to vaccinated or previously infected chickens. If vaccination is considered, flock owners should **consider only the tissue culture origin (TCO) vaccine**, which is administered by eye drop to birds four weeks of age or older. Even then, birds recently vaccinated with the TCO vaccine can infect non-vaccinated birds with ILT. Therefore, do not admit poultry for show if they have been vaccinated with the TCO vaccine 30 days or less prior to the exhibition. As with any and all available vaccines, success will only be achieved if all label directions for use and administration are strictly followed.

There is no specific treatment for ILT. Treatment with antibiotics is not effective because ILT is a viral infection. Although vaccines are available, in many cases, **depopulation of the ILT-infected flock followed by thorough cleaning and disinfection of the premises is often the best solution** to prevent the spread of the disease. An effective biosecurity plan is essential to prevent the introduction of infectious diseases like ILT into a flock. Sanitation of people, equipment, and vehicles should be practiced to minimize the risk of carrying infected material into contact with the flock. Controlled movement of personnel, materials and chickens is vital in stemming the spread of the disease. For commercial operations, feed deliveries, chick placement, birds destined for processing and other essential movements should be routed (to the extent possible) to avoid passing other commercial facilities with a history of ILT, those using ILT vaccine, and sites containing backyard flocks. Successful disease control and eradication depends heavily on cooperation among poultry integrators to quickly recognize and identify

cases, coordinate movement and establish routes into and out of the control area, strategically utilize a vaccination program if deemed necessary, and reach out and include local backyard and hobby flocks that may serve as a reservoir for reinfection. Thorough cleaning and disinfection of facilities following depopulation after an ILT break, accompanied by an extended downtime before repopulation (three to four weeks) (Lorenzoni, 2023), has proven successful as a means of eliminating circulation of ILT virus on individual sites and as part of regional control efforts (Chin et al., 2009).

Summary

Infectious laryngotracheitis is an acute, highly contagious respiratory disease primarily affecting chickens. Once introduced to a susceptible flock, the ILT virus spreads rapidly by contact. Birds which recover from the disease remain carrier birds and may continue to shed the virus for prolonged periods of time. If you **live in Tennessee and suspect that your backyard or hobby flock may be dealing with an ILT outbreak, contact the Tennessee State Veterinarian's office in Nashville at 615-837-5120** for assistance with risk assessment and possible disease testing. Avoid moving any birds onto or off the farm during an ILT break. Do not visit other poultry farms, fairs, shows, auctions, or exhibitions during an ILT break. If you are a commercial poultry grower, contact your field service technician at the first sign of a potential disease situation.

References

Bagust, T.J., and M.A. Johnson. 1995. Avian infectious laryngotracheitis: Virus-host interactions in relation to prospects for eradication. Avian Pathology 24(3):373-391.

Bagust, T.J., R.C. Jones, and J.S. Guy. 2000. Avian infectious laryngotracheitis. Revue Scientifique et Technique 19:483-492.

Barboza-Solis, C. 2021. Infectious laryngotracheitis infection in chickens raised in Western Canada: Molecular characterization and vaccine efficacy studies. MS thesis, University of Calgary, Calgary, Canada. Available at: https://prism.ucalgary.ca/server/api/core/bitstreams/2119a71b-eee5-4d48-9f80-aade6874a1b5/content. Accessed: 6 October 2023.

Chin, R.P., M. Garcia, C. Corsiglia, S, Riblet, et al. 2009. Intervention strategies for laryngotracheitis: Impact of extended downtime and enhanced biosecurity auditing. Avian Diseases 53(4):574-577.

Crawshaw, G.J., and B.R. Boycott. 1982. Infectious laryngotracheitis in peafowl and pheasants. Avian Diseases 26:397-401.

Dufour-Zavala, L. 2008. Epizootiology of infectious laryngotracheitis and presentation of an industry control program. Avian Diseases 52(1):1-7.

Garcia, M., S. Spatz, and J.S. Guy. 2013. Infectious laryngotracheitis. In: Swayne, D.E. (Ed), Disease of Poultry. 13 ed. Wiley-Blackwell, West Sussex, UK. pages 161-174.

Hayles, L.B., K.R. Macdonald W.C. Newby, C.W. Wood, E.W. Gilchrist, and A.C. MacNeill. 1976. Epizootiology of infectious laryngotracheitis in British Columbia 1971-1973. Canadian Veterinary Journal 17:101-108.

Hidalgo, H. 2003. Infectious laryngotracheitis: A review. Brazilian Journal of Poultry Science 5:157-168.

Hughes, C.S., R.M. Gaskell, R.C. Jones, J.M. Bradbury, and F.T.W. Jordan. 1989. Effect of certain stress factors on the re-excretion of infectious laryngotracheitis virus from latently infected carrier birds. Research in Veterinary Science 46(2):274-276.

Johnson,Y.J., N. Gedamu, M.M. Colby, M.S. Myint, et al. 2005. Wind-borne transmission of infectious laryngotracheitise between commercial poultry operations. International Journal of Poultry Science 4:263-267.

Jones, R.C. 2010. Viral respiratory diseases (ILT, aMPV infections, IB): Are they ever under control? British Poultry Science 51(1):1-11.

Lorenzoni, G. 2023. Infectious laryngotracheitis (ILT) in poultry. Available at: https://extension.psu.edu/infectious-laryngotracheitis-ilt-in-poultry#:~:text=Infectious%20laryngotracheitis%20(ILT)%20is%20an,respiratory%20disease%20primarily%20affecting%20chickens.&text=ILT%20is%20caused%20by%20Gallid,range%20from%20mild%20to%20severe. Accessed: 9 October 2023.

May, H.G., and R.P. Tittsler. 1925. Tracheo-laryngotracheotis in poultry. Journal of the American Veterinary Medical Association 67:229-231.

Ou, S.C., and J.J. Giambrone. 2012. Infectious laryngotracheitis virus in chickens. World Journal of Virology 1(5):142-149.

Ou, S., J.J. Giambrone, and K.S. Macklin. 2011. Infectious laryngotracheitis vaccine virus detection in water lines and effectiveness of sanitizers for inactivating the virus. Journal of Applied Poultry Research 20:223-230.

Ou, S.C., J.J. Giambrone, and K.S. Macklin. 2012. Detection of infectious laryngotracheitis virus from darkling beetles and their immature stage (lesser mealworms) by quantitative polymerase chain reaction and virus isolation. Journal of Applied Poultry Research 21:23-38.

Perez-Contreras, A. C. Barboza-Solis, S.M. Najimudeen, S. Checkley, et al. 2021. Pathogenic and transmission potential of wildtype and chicken embryo origin (CEO) vaccine revertant infectious laryngotracheitis virus. Viruses 13(4):541.

Seddon, H.R. 1936. Infectivity experiments with the virus of laryngotracheitis of fowl. Australian Veterinary Journal 12:13-16.

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