

Infectious Bursal Disease

What is infectious bursal disease (Gumboro, IBD)?

Infectious bursal disease is a highly contagious disease of young chickens (<17 weeks of age) in which the tissues of the immune system, and especially the bursa of Fabricius, are targeted resulting in immunosuppression and susceptibility to other infections, such as *E. coli*, *Salmonella*, *Mycoplasma*, coccidia, Marek's disease and others. The "classic" form of IBD occurs worldwide and is endemic throughout the United States.

What causes infectious bursal disease?

Infectious bursal disease is caused by a virus called infectious bursal disease virus (IBDV), which belongs to the avibirnavirus family. The virus is very hardy, can survive in a wide variety of environmental conditions, and is difficult to effectively decontaminate. The table below shows comparative resistance of IBDV with other infectious disease pathogens.

Longevity of Selected Poultry Disease-Causing Organisms in the Environment

Disease	Lifespan away from birds
Mycoplasma (MG, MS)	Hours to days
Avian Influenza virus	Days to weeks
Newcastle Disease virus	Days to weeks
Fowl Cholera (Pasteurella)	Weeks
Salmonella	Weeks
Coccidia	Months
Infectious Bursal Disease virus	Months
Marek's Disease virus	Months to years
Avian Tuberculosis	Years

What animals can be infected with infectious bursal disease virus?

The natural hosts of IBDV are the domestic fowl including chickens and turkeys. Young chickens that are 3-6 weeks age are the most susceptible to clinical disease. Wild birds, such as healthy ducks, guinea fowl, quail and pheasants, have been found to be naturally infected with IBDV. There is no evidence that IBDV can infect other animals or people.

What are the clinical signs of infectious bursal disease?

Usually, the first thing seen in a group of birds is a sudden increase in mortality (death loss). Clinical signs of affected birds can include depression and ruffling of feathers, poor or lack of appetite, huddling, unsteady gate, reluctance to rise, and diarrhea (sometimes bloody). Immunosuppressed survivors may be affected with other disease agents, resulting in various secondary infections that can end in death, or manifest as respiratory or gastrointestinal disease.

How is infectious bursal disease transmitted?

The mode of transmission is primarily through the fecal-oral route. The virus can persist in poultry house environments, even if infected birds are removed, for several months or longer. Feed, water and litter from such houses also remain infective for significant time periods. The virus is resistant to some disinfectants. There is no evidence for egg (vertical)

transmission of IBDV. Carrier birds do not appear to exist in recovered flocks and wild birds do not appear to be a significant factor in the spread of the disease.

What are the main lesions of infectious bursal disease?

In addition to clinical signs, birds will often have post-mortem lesions (identified upon autopsy) indicative of IBDV infection. The bursa of Fabricius is the main organ affected, showing swelling from edema and hemorrhage during the early stages of the disease and then shrinking (atrophy) 7-8 days following infection. Bleeding in the breast and thigh muscles may be noted due to impaired blood clotting. Enlarged kidneys and spleen are also typical of IBDV infection.

How is “classic” infectious bursal disease related to “very virulent” IBD?

The IBD virus genome is segmented and is susceptible to genetic mutations through random recombination of its gene segments. The very virulent strains of IBDV (vvIBDV) have mutations that allow the virus to replicate faster and cause more severe disease. IBD caused by vvIBDV were first detected in the USA in California in December 2008 and since then numerous commercial and backyard flocks have been affected with this virus strain. IBD caused by vvIBDV was detected in Washington State in March, 2014. The virulent strains have not been diagnosed in states other than California or Washington so far. The clinical signs produced by vvIBDV are similar to the classic virus, but involve higher morbidity – up to 80% (proportion of birds in group with clinical signs) and mortality up to 30% (proportion of birds in group that die).

How do I know whether my birds have infection with “classic” or “very virulent” IBDV?

Preliminary diagnosis of both “classic” and “very virulent” forms of IBD is by identifying a combination of characteristic clinical signs, the degree of flock mortality, and post-mortem lesions. Laboratory confirmation of the disease is by identification of the virus in affected tissues from dead birds. The “very virulent” IBDV strains have higher flock mortality than “classic” IBD and laboratory analysis would identify IBDV with specific gene mutations compared to “classic” IBDV. If any birds die within a flock, it is prudent to get an accurate cause of death. Upon suspicion of IBD infection, submit fresh or recently expired birds to [WADDL \(Pullman\)](http://www.waddl.wsu.edu) or [WADDL_AHFSL \(Puyallup\)](http://www.waddl.wsu.edu). Instructions for submitting birds for necropsy are available at http://www.vetmed.wsu.edu/depts_waddl/poultry/AHFSL-SubmittingBirdsforNecropsyNov2012.pdf. Both labs have a variety of tools to identify the virus.

How do I treat affected birds?

Unfortunately there is no effective treatment for IBDV.

How can I prevent the disease?

The primary focus for prevention and control should be on biosecurity of poultry premises. Rigorous cleaning and disinfection between flocks are essential for minimizing potential disease spread. A recent study indicated that a peroxygen product, bleach and a surface decontamination foam were effective at reducing viral loads but that a prolonged contact time might be necessary for this virus. If buying hatching eggs or chicks, request that the supplier provide information on the disease control and testing programs in the breeding flock. For more information on biosecurity for poultry, go to the USDA website, *Biosecurity for Birds*:

http://www.aphis.usda.gov/animal_health/birdbiosecurity/

WSU Websites to visit:

Washington Disease Diagnostic Laboratory (WADDL, Washington State University)

http://www.vetmed.wsu.edu/depts_waddl/

Avian Health and Food Safety Laboratory (a branch of WADDL)

http://www.vetmed.wsu.edu/depts_waddl/avian.aspx

Facebook: <https://www.facebook.com/AvianHealthFoodSafetyLaboratory>

Washington Department of Agriculture – Avian Health Program

<http://agr.wa.gov/FoodAnimal/AvianHealth/>

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