

## Marek's Disease

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### Species

Marek's disease is an important viral disease of chickens that causes paralysis and the formation of tumors that can occur in most organs of the body. Chickens are the main species affected. There are a few reports of Marek's disease occurring in other gallinaceous birds like pheasants and quail. Turkeys do not get Marek's disease.

### Status in Canada

Marek's is a very common disease world wide including Canada. It is so common that virtually every commercial chicken is vaccinated against this disease in the hatchery (either on the day of hatch or *in ovo at day 18 of incubation*). Clinical Marek's disease is very common in backyard, specialty and hobby flocks where vaccination is not usually done.

### Etiology

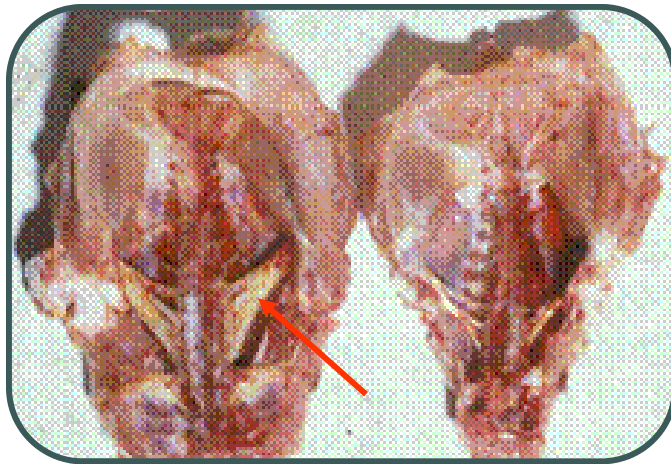
Marek's disease is caused by a Herpesvirus. There are 3 serotypes. Serotype 1 is the pathogenic type that causes disease and within this serotype there are several strains classified as mild, virulent and very virulent strains. Classification is based on the strains ability to cause disease. Serotype 2 is naturally occurring but does not cause disease. Serotype 3 is found in turkeys which also does not cause disease. Both serotype 2 and 3 have been used in vaccine production.

*If the nervous system is affected the birds present with lameness like the bird on the right or CNS signs including incoordination or paralysis.*



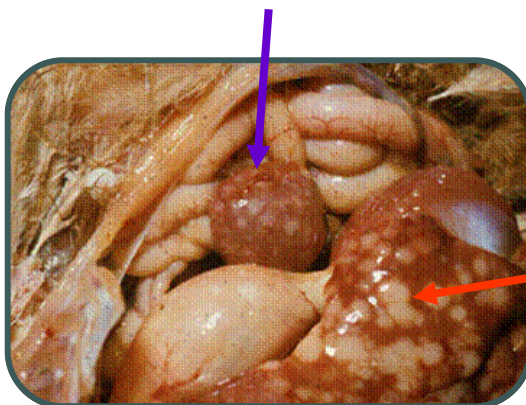
## The Disease

Marek's disease virus causes two types of disease. Early in the infection the virus can cause severe inflammation in the brain and nerves and can damage organs of the immune system. Birds can die with inflammation in the brain (encephalitis or meningitis) or become immune suppressed. If the birds live long enough the virus may infect specific cells of the immune system (T lymphocytes) causing these cells to transform and develop into lymphoid tumors that commonly invade the nervous system and other organs.



*This is a photo of the body cavity from two birds. The kidneys and other internal organs have been removed so that the nerves leaving the spinal column and going to the legs can be visualized. The bird on the left has swollen, yellowish and thickened nerves (see red arrow) due to Marek's tumor invasion. The bird on the right is not affected.*

These tumors can develop in any visceral organ including liver, spleen, kidney, testicle or ovaries. Sometimes tumors occur in the iris of the eye, in follicles of the skin, in muscle and many other organs.



*Internal organs of a chicken with Marek's disease. Note the white, raised tumors in the liver (red arrow) and spleen (blue arrow). The liver, spleen and proventriculus are involved.*

During the course of infection in a chicken, the Marek's virus finds its way to the skin and replicates in the feather follicle epithelium (cells forming the feather follicle). The virus is shed through feather dander and dust.



*Right: Chicken with many raised bumps on the skin. These are Marek's disease tumors affecting the feather follicles.*



*Left: Photo of a chicken with a Marek's disease tumor that has developed in the eye ball (actually the iris of the eye). The large white mass occupying almost the entire eyeball is the tumor. The eye on the left is not affected.*



## Treatment

There is no treatment for Marek's disease. Affected birds should be humanely killed and removed from the flock. Although there is no direct link between Marek's disease and human illness, birds with Marek's disease should not be eaten. Birds with tumors are always condemned at processing.

## Prevention

Marek's disease is readily transmitted from bird to bird through feather dust and dander. The virus replicates in feather follicle epithelium and the bird likely sheds virus for life.

Prevention is through vaccination at day 18 of embryonation (*in ovo*) or on the day of hatch. The specific type (strain) of vaccine used is dependent on the strains of Marek's virus found in that area. Virtually every commercial chicken in North America and many parts of the world are routinely vaccinated.

Good barn management and thorough barn clean outs help to reduce the amount of virus in the environmental and will reduce the challenge to newly placed chicks.



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