

Marek's Disease in Backyard Chickens



Raising backyard chickens has become quite popular in Mississippi in recent years. Some people enjoy the experience of going out to the pen or chicken coop and gathering eggs. Other folks have an interest in learning more about how their food is produced. Still others have discovered that backyard chickens are an excellent way to introduce their children to agriculture and teach them responsibility that comes with caring for the backyard flock. However, many backyard chicken keepers may be unaware of a common poultry disease that might threaten their chickens.

Marek's Disease

Marek's disease is **one of the most widespread poultry diseases** in the world. The first report of the disease was in 1907 by József Marek, for whom the disease is named. Since the initial discovery, the disease has been found worldwide and is a major concern to those associated with chicken production. It is a highly contagious viral disease caused by a herpes virus called *Alphaherpesvirinae*. The virus has the ability to invade the body and survive without being destroyed by the immune system. The virus infects certain white blood cells, causing some of these cells to become cancerous. These cells can then infiltrate internal organs (kidneys, liver, gonads, and proventriculus), peripheral nerves, skin, and muscles. Marek's disease can occur in chickens 3 to 4 weeks of age but is **most commonly seen in birds between 12 and 30 weeks** of age. Female birds are more often affected than are males. The disease can also infect quail and, on rare occasions, turkeys.

Transmission

Transmission of the virus occurs by direct and indirect contact between chickens. Once the virus is introduced into a chicken flock, infection spreads quickly from bird to bird, even if the chickens are vaccinated. Seemingly healthy birds may be infected and, if so, will regularly shed the virus into the surrounding environment. Both infected and recovered birds are lifelong carriers of the disease; they will continue to shed the virus in their feather dander and through oral and nasal secretions for the remainder of their lives. Be aware that, if you have infected birds in your flock and you bring in new birds, the new birds are at risk of becoming infected if they are housed with your birds and did not receive Marek's vaccination at hatch. The disease is not transmitted through the parents to the egg. Unfortunately, there is **no effective treatment** for the disease and **infected birds never recover**.



The virus replicates in the feather follicles and is shed into the environment in the dander, which contaminates the facilities and remains infectious for several months. Chickens become infected by inhaling the virus. The virus may also be spread by people or equipment that has been contaminated with chicken litter. Darkling beetles and their larvae may also carry the virus. The number of birds in a flock that will actually show signs of being sick varies depending on the vaccination status of the flock. Only a small percentage (usually less than 5 percent) of vaccinated birds will show signs of sickness. The number of birds that become sick in non-vaccinated flocks may reach 60 percent. In addition, the number of sick birds that die may reach 100 percent.

Symptoms and Various Forms of Marek's Disease

Birds that develop clinical symptoms of the disease usually do so because of some form of stress trigger. This could be normal hormonal changes associated with the onset of egg-laying in hens or crowing in roosters, flock fighting and peck order establishment, extreme weather conditions, predator attack, change in management or flock ownership, high parasite load, or rough handling. Birds may suddenly go lame, and this initial lameness may be mistaken for an injury. However, the lameness worsens until the bird is unable to walk. These birds may develop the classic Marek's paralysis pose in which one leg is positioned straight out in front of the body and the other straight out behind.

There are **four different forms of Marek's disease**, and infected birds may exhibit one or more forms:

1. Skin (cutaneous)
2. Nerve (neural)
3. Eye (ocular)
4. Internal organ (visceral)

Each form of the disease has different symptoms. Birds infected with the **cutaneous** form of the disease

have enlarged feather follicles (often called skin leucosis) that redden and may turn brownish in color and may scab over. The **neural** form of Marek's is characterized by enlarged nerves, leading to paralysis, incoordination, and breathing difficulties. Often the paralysis involves only one leg or wing. These birds often will die of starvation or be trampled to death if not euthanized and removed from the flock. This is by far the **most common form of Marek's** and is often referred to as range paralysis. The **ocular** form often causes blindness. In addition, the pupils do not respond to light correctly. The iris may turn gray, so this form of Marek's is often called "gray eye." Birds infected with the **visceral** form of Marek's disease will have lymphoid tumors in various organs. The tumors typically occur in the liver, spleen, heart, lungs, kidneys, proventriculus, gonads, and muscles.

The Mississippi Veterinary Research and Diagnostic Laboratory at Pearl can test birds for Marek's disease. If you think you have a problem, contact the lab at 601-420-4700. Lab personnel can assist you with submitting a bird for testing and provide details concerning pricing.

There are a number of clinical signs to watch for that may indicate a problem with Marek's disease. These include:

- One leg stretched forward and the other back
- Paralysis
- Gasping
- Drooping wings
- Squatting position
- Inward curving of the toes
- Incoordination
- Torticollis (twisted or crooked neck)
- Nervous tics
- Blindness
- Irregularly shaped or unequally sized pupils
- Change in eye color
- Enlarged crop
- Delayed crop emptying
- Weight loss
- Loss of appetite
- Depression
- Paleness
- Enlarged feather follicles, especially on legs
- Reddened, bloody looking shanks

Vaccination: The Only Control Method

There is **no cure or treatment for Marek's disease**. Vaccination is the only method to control the disease. The vaccine should be administered when chicks hatch or *in ovo* (in the egg) before hatching. It may take around 2 weeks for birds to build up immunity from the vaccine. During this time, it is critical to prevent young chicks from being exposed to the virus. It is best to purchase chicks from a hatchery that can vaccinate the chicks before shipment, but if you choose to do it yourself, check with your veterinarian, and be sure to follow the vaccine label to ensure good results. Vaccines are available for purchase by small flock owners. However, they come in large numbers (for 1,000 birds) and must be shipped and stored properly (35–45°F) to be effective. The vaccine is administered subcutaneously (under the skin) on the back of the neck and should be given as soon after hatch as possible.

It is **possible to vaccinate older birds, but the vaccine will probably not be effective** because the birds have likely already been exposed to a natural Marek's challenge by then. Again, Marek's is one of the most common poultry diseases in the world. Always practice good biosecurity, and keep young birds and older birds separated to reduce the threat of disease transmission.

Marek's disease is **not a risk to humans or other mammals**. Eggs and meat from infected chickens are **not affected by the disease and are safe to eat**. However, if a chicken was infected with the cutaneous form of Marek's, it may have skin and/or internal tumors that can be unsightly.

Sources of Help

- Your local county Extension agent
- Your local veterinarian
- Mississippi Board of Animal Health (601-359-1170)
- Mississippi State University Poultry Science Department (662-325-3416); ask for a poultry Extension specialist
- Mississippi Veterinary Research and Diagnostic Laboratory (601-420-4700)

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By Tom Tabler, Extension Professor, Poultry Science; Jessica Wells, Extension Instructor, Poultry Science; and Nikki Jefcoat, Poultry Division Director, Mississippi Board of Animal Health.



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