

Responses to Questions Asked During the February 2020 Webinar

1. What are the ways laying hens can contract ILT?

The main way this infection spreads is when an infected bird has contact with other birds and infects them, too. However, the wind can also move this virus so farms located near major highways that have live poultry truck traffic or farms close to and downwind from farms that are affected by the ILT virus are more at risk. In addition, the virus can spread through contact with contaminated coops, vehicles, clothing, or shoes.

2. What is the best way to clean equipment for coccidiosis?

Cleaning and disinfecting equipment to get rid of coccidial oocysts (eggs) is a challenge, because the oocysts are tough and resistant to many common disinfectants. We'll give you general guidelines for cleaning and disinfection which should help reduce the number of oocysts on equipment, but it will probably not eliminate them.

1. Before you start, move the equipment away from the place where you keep your birds.
2. First, use plenty of water and some dishwashing soap, or other common detergent, to wash away dirt, and most of the coccidial oocysts (eggs). Let the equipment dry thoroughly before proceeding to the disinfection step.
3. Then, apply a disinfectant according to label directions. No disinfectant is labelled by EPA as effective against coccidia or other parasites, so choose a disinfectant that is effective against *Salmonella* bacteria and avian influenza virus (the label will have this information). Be sure to leave the product on for the required contact time.
4. Finally, allow the equipment to dry in the sun or in another hot environment, like a closed shed.
5. As an extra precaution, use "downtime" to further reduce any remaining germs: leave the equipment in a pest-free room for several days after drying before you use the equipment in the place where you keep your birds.

3. Please highlight findings in case of diagnosis, especially MG and coryza.

Mycoplasma gallisepticum infection:

- Backyard chickens: Swelling of the eyes (due to inflammation of the conjunctivae), usually in both eyes. The eyes may swell shut. There is usually eye and nasal discharge. Facial swelling is seen in some cases, especially if there is secondary bacterial infection in the sinuses.
- Turkeys: Swelling under both eyes due to accumulation of mucus in the nasal sinuses.

Infectious coryza:

You normally see swelling of the face on both sides under the eye due to accumulation of fluid under the skin of the face and as well as accumulation of mucus in the nasal sinuses. Swelling of the face can be so severe to cause closing of the eyes.

4. What is your recommendation if a backyard flock owner has a positive case of Marek's in his flock?

Two very important points to keep in mind about Marek's disease virus are:

- Chickens that develop Marek's disease are usually infected at a very young age (shortly after hatching), but don't show signs of their disease until they are much older (several months to several years of age)
- Marek's disease virus can survive in the environment for a very long time – many months.

Knowing those two facts, you can control Marek's disease in a backyard flock by focusing on protecting young birds from exposure to the virus.

You can do this by:

1. Promptly humanely euthanizing and appropriately disposing of any chicken that shows signs of Marek's disease, since they will not recover, and they will shed virus into the flock's environment during the course of their fatal illness.
2. Thoroughly clean and disinfect anything that you can, including coops, feeders, waterers, and other equipment to remove as much of the virus from the environment as possible.
3. Prevent new chicks from being exposed to the virus until they are at least 5 months of age, since they are most susceptible to Marek's disease when they are exposed to the virus at a young age. Here are some ways you can do this:
 - a. Don't allow hens to hatch and brood their own chicks.
 - b. Raise chicks in a separate location, such as a clean shed, that has never been used to house adult birds, and keep the adult birds away from this brooding area (at least 30 feet is a good rule of thumb for separation).
 - c. Or, don't bring in chicks as replacements. Only bring in chickens older than 5 months, preferably birds that have been vaccinated as chicks within 24 hours after hatching.
4. If possible, purchase chicks vaccinated against Marek's disease either in the egg or within 24 hours of hatching, or have chicks that you hatch vaccinated no later than 24 hours after hatching.

Unless you are willing to depopulate the flock and start over, you don't have many options, other than wait and watch, for managing the adult chickens that lived with a case of Marek's disease. Vaccination of adult birds is too late to be helpful, and a useful live bird test for Marek's disease doesn't exist yet.

5. Have any birds been diagnosed recently with vND that might have actually suffered from Marek's?

In the U.S., birds are diagnosed with vND by identifying the vND virus with a PCR test on swabs from the bird's mouth or vent. We know with a high degree of certainty that a bird that tests positive for vND was actually infected with the vND virus. If your concern is that a Marek's disease case could be misdiagnosed as vND, that error would be very, very unlikely, because of the care taken to confirm the vND diagnosis.

On the other hand, it's possible that a bird diagnosed with vND also suffered from Marek's disease at the same time, and besides being horribly unfortunate for the bird, a dual infection would make it difficult for anyone to tell which disease was contributing most to the poor bird's nervous system problems. Also, Marek's disease suppresses birds' immune systems, leaving them susceptible to infection with other poultry viruses, like Newcastle disease virus.

6. Do Marek vaccinated birds test positive on PCR and other testing or do they only test positive if they are actually infected with Marek's?

A vaccinated bird will test positive for Marek's disease virus on PCR. This is because the vaccine includes a version of the virus that replicates in the feather follicle epithelial cells and is shed into the environment.

7. Veterinarian help would be great in managing disease, but what do you do when you don't have any resources? None of our livestock vets treat poultry, and our county extension doesn't have any poultry contacts.

Online resources may be valuable, but it is good to be cautious about the source as blog/public information sites may contain misinformation. Including 'university extension', 'USDA', or 'department of agriculture' in your search terms can help ensure you are getting the most reliable information.

Ultimately, having a veterinarian that is willing to see poultry would be a valuable resource. Local university veterinary schools or agriculture departments may be able to point you to poultry veterinarians.

8. Is giving the vaccine for Marek's as an adult a good plan? Do most producers give this vaccine to their chicks that end up being sold at stores like tractor supply? I have a small backyard flock (5 ladies, no roosters) and would like to help prevent anything.

Unfortunately, vaccinating adult birds against Marek's disease is rarely helpful, since birds that develop signs of Marek's disease were almost always infected as chicks. Although Marek's vaccination for adult birds isn't helpful, it won't harm them.

Many hatcheries offer Marek's disease vaccination to their customers who purchase mail-order chicks, and we recommend that you opt for this service if it's available. Feed and pet stores might not request Marek's disease vaccination for the chicks they purchase for resale to the public. Ask the store, and if they don't purchase vaccinated chicks from the hatchery, request them to order chicks that have had Marek's vaccination. They may decide to routinely purchase Marek's vaccinated chicks if enough customers ask for it.

9. Will there be any parasite portions to this webinar?

We will not cover parasitic diseases other than coccidiosis in this webinar, but we'll keep your question in mind as a topic of interest when we plan future webinars.

10. How do you know if your flock has a disease when you have 100+ chickens?

Often changes in the flock – such as behavior, egg production, food and water consumption etc. – can be a good indicator something could be wrong. Individual sick birds should be examined by a veterinarian to determine the cause and see if the problem could affect the rest of the flock. Some veterinarians may also provide routine flock health evaluations. If you have dead birds, they also can be a source of valuable information. Your state diagnostic laboratory may be able to help determine cause of death and whether the flock can be at risk.

11. Wild birds and insects, well established vectors for viruses such as AI, frequently come into contact with feed ingredients and finished feeds. Should feed protection be part of an integrated biosecurity program?

Yes! Preventing feed contamination is Principle #12 of the [14 NPIP Biosecurity Principles](#). Feed, feed ingredients, bedding, and litter should be delivered, stored and maintained in a manner that limits exposure to and contamination by wild birds, rodents, insects, and other animals. Feed spills should be cleaned up and disposed in a timely fashion.

12. Would you recommend someone ordering the Marek's vaccine with chicks that they get from the hatchery? For the many folks that get chicks directly through the mail, would this be a helpful recommendation?

When ordering/buying chicks, we recommend you determine what Marek's vaccinations they are receiving. Asking how the vaccines are stored may be helpful as well. The best vaccines for Marek's require specialized storage (liquid nitrogen), but here are some good vaccines that can be just stored at room temperature. Especially if you have had problems with Marek's disease in the past, it is strongly recommended to get birds that have been vaccinated within 24 hours after hatching.

13. What are your thoughts about the coccidiosis vaccine? Does it work/is it worth doing? How should it be given?

Unless coccidia is causing clinical disease in your flock, it is not recommended to give a coccidia vaccine to backyard/independent poultry. The vaccine is challenging to use appropriately, and ideally would be given with veterinary oversight. It is also important to remember that exposure to coccidia is not necessarily bad, unless it is a very high dose or the animals are immunocompromised by other factors. Exposure at a young age to low doses helps the birds develop an immune response that will protect them later in life.

It is recommended to keep the environment relatively clean and dry to minimize the amount of coccidia in the environment. Watch your birds for clinical signs such as diarrhea, blood in droppings, weight loss, depression. If you are concerned your birds may be sick from a coccidial infection, consult your veterinarian to get an accurate diagnosis and discuss potential treatment/prevention options.

14. Is there any evidence that giving probiotics can help prevent or treat coccidiosis?

Probiotic supplementation, either in the feed or drinking water, can help prevent and control coccidiosis, especially when combined with coccidiosis vaccine.

Probiotics don't appear to be as effective as anticoccidial medications in treating chickens that are already sick with coccidiosis.

15. Does the Marek's vaccine need to be done in the first 24 hours because the bird's response to the vaccine changes after 24 hours, or because the bird is likely to get infected before the vaccine takes effect?

The bird is likely to get infected before the vaccine takes effect. The vaccine must be given about a week before the chick is exposed to the virus, in order for the chick to develop immunity and be protected from the virus.

In an environment contaminated with Marek's disease virus, chicks can be exposed to the virus immediately after they hatch. So, chicks need to be vaccinated as soon as possible after hatching, and even 24 hours after hatching might be too late for chicks that hatch into a virus-contaminated environment. Keeping your brooder area very clean will be helpful to reduce the risk that your chicks will be exposed to the virus while the vaccine is doing its job.

By the way, many commercial hatcheries now use an *in ovo* (in-the-egg) delivery system to administer the vaccine to embryonated eggs 3 days before hatch, allowing for protection of chicks at an earlier age. Unfortunately, backyard flocks rarely have access to this delivery system.

16. What is the withdrawal period, after giving medications, for eating eggs?

Most medications have not been tested to determine a withdrawal period in eggs, and therefore are not recommended for use in backyard poultry that produce eggs for human consumption. If there is research on withdrawal periods, those withdrawal times will be listed on the medication prescribed by the veterinarian or will be provided by the veterinarian. Your veterinarian can work with the Food Animal Residue Avoidance Databank or FARAD (www.farad.org) to determine if withdrawal times are available for specific medications.

17. Do you have any guidance for flocks comprised only of turkeys (no chickens)?

The same biosecurity principles and good flock management practices apply to turkey flocks. No routine vaccinations are recommended for healthy backyard turkey flocks, since Marek's disease is not a significant problem for turkeys.

We highly recommend keeping turkeys away from chickens or places where chickens have been raised in the recent past, since turkeys are extremely susceptible to blackhead disease that chickens can harbor.

18. Do birds only carry *Salmonella* silently or can they get sick as well?

Birds that carry *Salmonella* spp. in the intestine do not get sick. The infection is asymptomatic (silent), but infected birds shed *Salmonella* in the droppings and contaminate the environment.

19. Is the NPIP serum available in Ohio? What is required to be tested for NPIP certification?

Contact your state's Official State Agent directly to find out about your specific state's program. You can find your state agent by going to the following website and clicking on your state. The agent(s) contact information should be at the top (<http://www.poultryimprovement.org/statesContent.cfm>). We recommend discussing NPIP testing requirements with your specific state agent before getting testing supplies or collecting samples.

20. What if I am ordering young birds from one place and they come into the flock piecemeal throughout one month? I'm getting a couple one weekend and another group the next weekend, for three weekends in a row.

Think of all of the birds that you bring in from one place as one quarantine group. Each weekend, put the new birds into the same quarantine area that is separated from your existing birds by at least 30 feet. Confine all of the new birds in the single quarantine area until the last group has been in quarantine for at least 30 days. If all the birds

remain healthy during that time, you could introduce them to your existing flock. If a quarantined bird becomes sick or dies during the quarantine period, take the bird to the closest veterinary diagnostic lab, or contact your veterinarian, to try to determine what the problem is and whether it can affect your other birds.

21. What about those who free-range their birds? Is that actually not recommended?

Poultry that have access to the outdoors are able to express their full range of natural behaviors, such as foraging and dust bathing, and people appreciate the qualities of free-range eggs and meat. However, the lifestyle has drawbacks: free-range flocks face the daily risk of bird death by predation, and the introduction of germs (such as avian influenza or *Salmonella* bacteria) carried by wildlife. Damage caused by predation and infectious disease are two big reasons that modern commercial poultry production has mostly moved indoors.

However, the risks can be well-managed by flock keepers who accept the free-range tradeoffs, through extreme attention to detail about providing and maintaining predator-resistant fencing and housing, installing overhead netting and other devices to deter wild birds from commingling with poultry, and preventing wild birds and rodents from accessing feed and water intended for poultry.

Talk with flock keepers who have successfully managed free-range poultry to see if you are up for the challenges and that lifestyle is a fit for you and your birds.

22. What do you recommend for bait stations to prevent predators (raptors, etc.) from becoming sick by eating treated rodents?

Non-target predators, including raptors, can be poisoned by rodenticide bait directly, by ingesting the bait, or indirectly, by consuming prey that has ingested the bait.

Professional pest control companies can set up and maintain bait stations properly for you. If you are doing it yourself, and you are using poison bait to control rodents, you must follow the label directions. Bait stations must be tamper-proof, so that they are weather-resistant, strong enough to keep out children and animals larger than rodents, lockable, and capable of being anchored so that bait can't be shaken out.

Rodenticides with high secondary poisoning risks to birds such as hawks and owls are anticoagulant rodenticides, most commonly difethialone, brodifacoum, and possibly bromadiolone. Using non-anticoagulant rodenticides such as bromethalin, cholecalciferol, or zinc phosphide may reduce the risk of poisoning of non-target predator species.

23. What is the best way to clean a coop to help with disease prevention in mind? Do you use bleach, H₂O₂, white vinegar, a commercial product? How often should this decontamination procedure be performed? Every cleaning? Weekly? Monthly?

Cleaning of coops is a very personalized process. There is not a one-size-fits-all protocol. A lot has to do with the number of birds in the environment, space available, and other environmental/management conditions. If you have access to a university extension agent or veterinarian, they can help guide you for your specific conditions. It is important to have clean waterers and feeders and to avoid using any products that create residues when cleaning your equipment. Scraping up layered fecal material, changing bedding, or moving a coop can help with basic sanitation.

24. in Arizona we do not have a poultry vet or lab that participates in NPIP. Where do I go?

Contact your state's Official State Agent to find out how they recommend you complete NPIP testing and what labs they recommend or require. You can find your state agent by going to the following website and clicking on your state. The agent(s) contact information should be at the top.

(<http://www.poultryimprovement.org/statesContent.cfm>). Your state NPIP agent or local university with a veterinary school or agricultural department may be able to help you find a local veterinarian that sees poultry.

25. What are the signs of *Mycoplasma synoviae* (MS) in layer birds?

Infection of the upper respiratory tract is usually silent, meaning that birds usually carry *Mycoplasma synoviae* in the upper respiratory tract without showing symptoms. However, a mild and temporary drop in egg production may occur.

26. Where can veterinarians interested in poultry find information on reportable diseases? How to conduct a report, where to find guidelines?

Reportable diseases can be different for every state. Contact your state veterinarian's office to determine what diseases are reportable in your state and the reporting specific requirements.

27. When Marek's comes, can we do the vaccine during the disease or production in later stage?

Unfortunately, vaccinating adult birds against Marek's disease is rarely helpful, since birds that develop signs of Marek's disease were almost always infected as chicks. Although Marek's vaccination for adult birds isn't helpful, it won't harm them.

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and pet stores might not request Marek's disease vaccination for the chicks they purchase for resale to the public. Ask the store, and if they don't purchase vaccinated chicks from the hatchery, request them to order chicks that have had Marek's vaccination. They may decide to routinely purchase Marek's vaccinated chicks if enough customers ask for it.

28. How do you recommend fair cage set-up be handled for poultry?

Cage set up at fairs is very tricky, although it is very simple. Most fairs do not allow for space for the birds to distance from other birds, so it is possible diseases could spread across birds coming to the fair. It is essential to set up a strict quarantine for any birds coming back from a fair, and to practice strict biosecurity between quarantined birds and other birds on your property (that were not at the fair).

In fair settings, it would be good to have the ability to separate birds that may show aggression towards neighboring birds. Airflow in the space at fairgrounds can also be tricky – provide fresh air into the facility without exposure to adverse temperatures or unavoidable sun exposure whenever possible.

29. Do you have recommendations to boost chickens' immune systems, especially during stressful times such as severe cold/high heat temperatures? In the winter I periodically (when severe cold temps) give warm pumpkin or squash to increase Vitamin A intake.

Probiotics, either in the feed or in the drinking water, can be helpful to support birds' gut health and immune system during stressful times.

Forage treats can also support immune system health and general welfare by reducing social stress. Introduction of new birds, established groups being mixed up, or boredom can cause hens to fight. Flock aggression can be so severe that the behavior leads to vent pecking, feather pecking, and even cannibalism. Forage treats, like a whole smashed pumpkin or squash that you suggest, are excellent ways to keep hens busy. Let them joyously tear apart discarded vegetables: rind, seeds, and all. Other treats for plenty of scratching, pecking, and hunting enjoyment are straw bales, a bundle of leafy greens suspended on a string, or a commercially prepared "peck block" intended for poultry.

30. What if a diagnostic laboratory diagnosed ILT in my laying hens? Do I dispose of them and start over or just stay away from any other flocks?

It depends on the relationship and use you have with your flock. ILT is mostly a chicken disease and does not affect people, but people can carry the virus from flock to flock inadvertently.

ILT is a disease that is a lifelong infection, so your flock will always be a risk. If you are selling or giving away any birds from your flock, it is important you let the person receiving the birds know that your flock was positive for ILT.

ILT is caused by a herpesvirus and like other herpesvirus, birds may show clinical signs and shed more virus when they become stressed. It is important to be very careful visiting any other chickens or having people with chickens visit your flock. Because of how contagious the disease is, some people choose to dispose of a flock that has tested positive for ILT, but these birds can live normal lifespans especially if they do not have a lot of stress.

31. I am looking at a disease that mimics MG, but the 4 chickens that I sent in for necropsy all tested negative. They also tested negative for avian flu, IB, ILT, MS, infectious bursal disease, and Bordetella avium. Pathologic changes were seen in liver, spleen, lungs. Septicemia was suspected, but they couldn't find anything specific to a certain disease. Chicks start exhibiting symptoms at 2 days old, and there is 50 percent mortality. The ones that live seem to get random episodes throughout their lifetime—eyes get white/yellow discharge starting in the left, eyes swell up, respiratory issues follow with trouble breathing. Food intake is not interrupted and birds that live gain weight normally. They are contagious when the eye problem is active. Females that survive illness do not lay eggs, or if they do it is very hindered. Birds were tested by diagnostic laboratory at Purdue addl. Does anyone have any ideas even though there is not much info I could post in a question?

You have taken important steps to establish a diagnosis: necropsy and ancillary laboratory tests are necessary in cases like this. You may need to seek additional help to solve the mystery. If you haven't already, consult with a poultry veterinarian at Purdue to discuss a diagnostic plan, or contact your State Veterinarian or Cooperative Extension Service. If you are in Indiana, the Indiana State Poultry Association is a good resource at ISPA@purdue.edu or 765-494-8517.