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Common Bacterial Diseases in Backyard Chickens

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They're adorable. They're fluffy. They're organic. Whether as pets or as a food source, backyard chickens are increasingly popular. All sorts of folks, particularly those in or near large cities, are exploring the joys backyard chickens have to offer, often for the first time. While keeping and caring for chickens is exciting, it is also a serious responsibility. Just as cats and dogs can get sick with various diseases, so can chickens. One of the many causes that can make chickens sick are bacteria.

Chickens as Food Animals

Regardless of whether your birds or their eggs are consumed, chickens are considered food animals and are subject to federal and state regulations. When a chicken is sick, some of the medications your veterinarian can prescribe may have a drug withdrawal period. This means you will have to wait to eat eggs, meat, and other biproducts during treatment and for a period after treatment ends to make sure there are not any drug residues in what you are eating. You must keep this in mind if your birds are treated for a bacterial disease. Your veterinarian will give you a drug withdrawal period.

As an owner, this means if your birds test positive for particular infectious diseases, a state veterinarian may visit and evaluate your flock. Restrictions and regulations vary by state, but some state veterinarians have the authority to order a depopulation (euthanasia) of flocks for public health reasons. Bacterial diseases that can cause federal agencies to get involved include *Salmonella pullorum, Salmonella gallinarum* (fowl typhoid), and sometimes *Mycoplasmas.*

Disease Prevention Strategies

Taking proper care of chickens requires extensive attention and should be thoroughly understood *before* you decide to bring chickens home. There are general steps you can take to prevent bacterial disease in your backyard flock, including proper husbandry and biosecurity practices. Examples of good husbandry that can reduce the likelihood of bacterial diseases include proper nutrition, clean and fresh water, suitable housing with adequate ventilation, and plenty of space for each chicken. All of these measures help reduce stress and make your birds less susceptible to disease. Biosecurity is the measures you take to prevent introducing and spreading diseases. Some measures are wearing clothing and shoes that you only wear when working with the flock, obtaining birds from known disease-free flocks, and having a separate isolation area for quarantine and sick animals, and separating age groups.

One effective way to prevent bacterial diseases is by purchasing birds and chicks from a reputable, disease-free source, such as buying birds from flocks that are certified by the National Poultry Improvement Plan (NPIP). The NPIP program provides monitoring and testing for a number of infectious diseases including *Salmonella* species*, Mycoplasma* species*,* and avian influenza. Poultry farms can be NPIP-certified for each specific disease, and all birds (and breeders producing eggs and chicks) being

sold across state lines must be certified negative for *Salmonella* pullorum/typhoid and avian influenza before transport. If you want birds that are negative for *Mycoplasma*, the flock must be certified for each *Mycoplasma* species.

Sourcing your birds from certified flocks is a great way to prevent disease, and prevention is always easier than treatment since many bacterial diseases in poultry cannot be cured.

Treatment

For the majority of chicken bacterial diseases, treatment involves antibiotics. They can be given in the water or with pills (there are other ways that are impractical for flocks of less than 500). How they are given depends on the specific disease and which method is most practical. While treatment can help resolve symptoms in your birds, many chicken bacterial infections can never be cured. These birds that no longer show symptoms become carriers, and will be able to spread the bacteria to other uninfected birds. This carrier status is common among chicken bacterial diseases and there are several options if your birds fall into this category.

One option is depopulation of your flock. Combined with proper sanitation of the environment, this option allows for complete eradication of the bacterial disease affecting your chickens. Many backyard chicken owners are more than reluctant to pursue this option. Thankfully, there are alternatives. Another option is to treat your birds for the disease, and accept that your flock will be persistently infected, and may need to be treated multiple times as symptoms reoccur. In these cases, you will need to work with your veterinarian to keep your birds healthy and reduce symptoms. Depending on the disease, you may be required to inform anyone about the bacteria the chickens carry to whomever comes into contact with your chickens or their products.

If you decide to keep infected birds, your flock should remain closed. This means birds should not enter or leave the flock. If chicks are not allowed to hatch, eventually your birds will naturally die off. Once this happens, the environment can be cleaned and you can get birds that you know are disease free.

Alternatively, there are vaccines against some of the bacterial diseases that can be given to new chickens you want to integrate into your closed and infected flock. These vaccines often do not prevent infection, but do prevent symptoms. Talk with your veterinarian about what options work best for your flock since treatment often does not cure.

Bacterial Diseases

See charts 1 and 2 for a summary of each disease.

Note: *Mycoplasma* species are not technically bacteria but are similar and thus the diseases they cause are listed here.

Chronic Respiratory Disease (CRD)- Mycoplasma gallisepticum

Mycoplasma gallisepticum is a common chronic and mild disease in chickens. Symptoms include coughing, lung noises, sneezing, nasal discharge, eye discharge, and facial swelling. Younger birds are more severely affected and can show signs of stunted growth and, in some cases, death. Chickens can become infected and spread CRD through direct contact with infected or carrier birds, contact with contaminated equipment, or from hen to chick. It can be diagnosed by submitting samples for testing. Treatment is with antibiotics although it is not curative and only treats clinical signs. Birds remain carriers for life, and can spread the disease to other birds and their offspring.

Infectious Coryza

Infectious coryza is caused by *Avibacterium paragallinarum,* and occurs in all age groups but most commonly occurs in semi-mature to adult birds. Coryza is usually seen in situations where the area is never emptied of chickens. This disease has a rapid onset, but once it is established in a flock, the remaining birds become carriers for life, even if they do not show any symptoms. Symptoms may include swelling of the face around the eyes and sometimes the wattles, sneezing, nasal and eye discharge, pink eye, swollen sinuses, and sometimes lower respiratory infections. Introducing infected or carrier birds causes it in a flock. Treatment options include depopulation or antibiotics but recovered

birds will remain carriers. If chickens with this disease are kept and replacement birds are added to the flock, there is a vaccine available that can be given to incoming birds but that is only feasible for large flocks, not backyard chickens.

Fowl Cholera

Fowl cholera is caused by *Pasteurella multocida,* with mature chickens being more susceptible to disease than younger birds. Chickens can become infected by carriers that are not showing symptoms, wild birds, predators, rodents, pigs, cats, and contaminated equipment and environments. Symptoms range from difficulty breathing, fever, reduced appetite, reduced egg production, rapid weight loss and sudden death to swollen face, wattles, and swollen joints. Antibiotic treatment can be given for confirmed diagnoses, although your birds will likely remain carriers. A vaccine is available and can be used in regions where fowl cholera is common, but that is not a substitute for good sanitary practices. Rodent control and preventing your flock from associating with wild birds is important in preventing fowl cholera.

Infectious Synovitis

Infectious synovitis is caused by *Mycoplasma synoviae* and can affect birds in two ways: Chickens can show either signs of respiratory disease or lameness. This disease can spread through the egg from hen to chick, direct contact, respiratory particles over short distances, and by indirect contacts, such as on equipment or a person's clothing. Treatment by antibiotics is used to reduce symptoms, which often come back again after treatment is finished. Once a flock has the disease, they are carriers for life. Breeding flocks can be certified NPIP negative, so acquiring from certified negative flocks is ideal.

Botulism

Botulism is caused by *Clostridium botulinum* and can affect birds of any age. Chickens become exposed by ingesting contaminated food, water, carcasses, maggots, decaying organic material, and sometimes bugs. Depending on the amount of toxin ingested, symptoms can range from dullness and sleepiness to paralysis of the legs, wings and neck and death within 12-24 hours. To treat and prevent botulism in your birds, focus on eliminating potential sources of toxin production by removing all dead animals immediately, controlling fly and insect populations, and preventing access to decaying organic matter. Birds should not be given food and water by mouth until they are able to lift their head up. Vitamins and antibiotics are reported to reduce death rates. Antitoxin is available but it is difficult to get and expensive. In areas exposure to botulism is high, there is a vaccine available

Pullorum Disease

In the U.S., *Salmonella pullorum* has been eradicated by those participating in NPIP but can be found in other countries. Pullorum disease is caused by *Salmonella pullorum* and is highly fatal to young chicks. Adult birds may or may not show unthriftiness, but spread the *Salmonella* through the egg to chicks. The infected chicks then spread the *Salmonella* to the other chicks. Often eggs have decreased hatchability, and clincal signs in chicks include weakness, lack of appetite, sleepiness, sudden death, a higher mortality around 4-5 days old, droopiness, chilled appearance and huddling under heat sources, and white diarrhea with a "pasted-down" appearance around the vent. After a week of age, birds that inhaled the organisms in the hatcher may show respiratory signs. The number of deaths peaks around 2-3 weeks of age. Birds that survive are irregular in size, unthrifty, stunted, or poorly feathered. Pullorum disease can get into your flock through direct contact with carrier chickens, contamination of equipment and from hen to chick. Once your birds are affected, they will be carriers for the rest of their lives. Prevention includes purchasing birds and eggs from NPIP-certified flocks or similar eradication programs.

Fowl Typhoid

Fowl typhoid has also been eradicated in the U.S. It is caused by *Salmonella gallinarum* and while chickens of any age can be affected, it primarily occurs in young adults older than 12 weeks of age. It can get into your flock through direct contact with contamination of equipment, carrier chickens, and from hen to chick. Signs of illness include sudden death (sometimes sporadic), listlessness, yellow diarrhea, loss of appetite, and a pale, anemic appearance of comb and wattles. Prevention includes purchasing birds and eggs from NPIP-certified flocks or similar eradication programs.

Paratyphoid

Paratyphoid is caused by a type of *Salmonella* and affects mainly young birds. Signs of illness are similar to those seen with pullorum disease and include anorexia, diarrhea and reduced egg production. However, chickens are often asymptomatic so your birds may seem unaffected despite harboring this bacterium. Treatment and prevention are similar to those for fowl typhoid.

Necrotic Enteritis

Necrotic enteritis is caused by *Clostridium perfringens* and most heavily affects chickens 2-12 weeks of age. If your flock is affected you may see birds become acutely depressed and die within hours or dark, often blood-stained diarrhea, reduced appetite and weight loss. Birds become infected by eating contaminated fecal matter, soil and other material. Unlike other diseases, treatment with antibiotics will resolve this disease in your chickens. In addition, your veterinarian may recommend supportive vitamin treatment to enhance the effectiveness of the antibiotics. Necrotic enteritis tends to occur more frequently in overcrowded, immuno-suppressed flocks so good husbandry and management are particularly important in prevention. Part of this husbandry involves having an effective deworming protocol as coccidiosis may be a contributing factor.

Salpingitis

Salpingitis (inflammation of the tube through which the eggs pass) has many causes, some of which do not involve bacteria. When bacteria are involved though, it is usually *E. coli*. Salpingitis is common in older birds and affected hens may show signs of decreased egg production, a distended stomach, and difficulty walking. Your chickens cannot spread this disease to each other as it is mostly caused by changes in their reproductive system related to age. As a result, this is no way to prevent salpingitis. You can, however, still treat your birds with antibiotics if they become infected. Your chickens may need surgery to remove their tube to completely resolve this issue.

Bumblefoot

Bumblefoot is a common condition among backyard poultry typically complicated by secondary bacterial infections, particularly *Staphylococcus* species. If any of your chickens develop bumblefoot, it could be due to pressure necrosis (in which pressure restricts the flow of blood, causing the skin tissue to die) from inappropriate footing, trauma, and abnormal posture and weight bearing. The effects of pressure necrosis are especially important if your chickens are obese as this increases the compression of the soft tissue structures in their feet. If affected, you may see a progression of signs. Initially, less severe signs include redness of the foot followed by swelling, pain, and in severe cases, loss of function. Depending on the degree your chickens are affected, treatment ranges from foot soaks and pressure-relieving bandages to surgery. Prevention goes a long way in terms of bumblefoot and includes an appropriate diet, proper footing and perches, and good drainage of the chicken coop to avoid wet or muddy ground.

Colibacillosis

Colibacillosis is caused by *E. coli* and can affect chickens of all ages in many ways. Depending on the body system affected, you may see signs of respiratory distress, GI signs like diarrhea, or sudden death. Diagnosis of colibacillosis can be difficult as many strains of *E. coli* are normal inhabitants of your chickens' intestinal tracts and do not cause disease. Thus, your veterinarian will need to look at the entire picture as well as laboratory results since a positive test does not necessarily mean *E. coli* is responsible. If your chickens are suffering from colibacillosis, treatment options include antibiotics but these have variable success. Preventing this disease focuses heavily on proper management and sanitation practices and reducing stress factors that make your birds more susceptible to infection. Examples of these practices include adequate ventilation, good litter and range conditions, and properly cleaned facilities.

If you have any questions, contact your veterinarian.

Chart 1: Common Bacterial Diseases and Symptoms

Disease	Bacterial Agent(s)	Primary Body System Affected	Symptoms
Chronic Respiratory Disease/Mycoplasmosis	*Mycoplasma gallisepticum*	Respiratory	Coughing, discharge around the eyes and nose, facial swelling, unthriftiness
Infectious Coryza	*Avibacterium paragallinarum*	Respiratory	Difficulty breathing, facial swelling around eyes and wattles, swollen sinuses, hallmark foul-smelling, sticky discharge around eyes and nose and decreased egg production
Fowl Cholera/ Pasteurellosis	*Pasteurella multocida*	Respiratory	Inflammation of the conjunctiva and sinuses (redness, swelling, pain, increased heat), swelling and darkening (cyanosis) of the face and wattles, loss of appetite, stupor, rapid weight loss, lameness, difficulty breathing, watery yellowish or green diarrhea
Infectious Synovitis	*Mycoplasma synoviae*	Respiratory and Musculoskeletal	Lameness followed by lethargy, reluctance to move, swollen joints, stilted gait, weight loss, and breast blisters. Can also exhibit respiratory distress. Greenish diarrhea common in dying birds.
Botulism	*Clostridium botulinum*	Musculoskeletal/ nervous system	Weakness followed by progressive flaccid paralysis of the legs, wings and neck resulting in “limberneck”. Peculiar trembling, feathers pulled out easily, dull partly closed eyes, mucus in mouth, and lie in lifeless coma before death
Pullorum Disease/ Salmonellosis/ “White Diarrhea”	*Salmonella enterica,* biovar Pullorum	Multiple	Lethargy, growth retardation, difficulty breathing, chilled appearance, white diarrhea, joint swelling blindness, and death possible in recently hatched to young birds
Fowl Typhoid	*Salmonella enterica,* biovar *Gallinarum*	Multiple	Sudden or sporadic death, listlessness, green or yellow diarrhea, loss of appetite, increased thirst and pale, anemic appearance of comb and wattles mostly in young adult birds (older than 12 weeks)

Paratyphoid	*Salmonella enterica* serovars Enteritidis and Typhimurium	Gastrointestinal	Similar to pullorum disease in young birds
Necrotic Enteritis/ Rot gut	*Clostridium perfringens*.	Gastrointestinal	Acute depression and death within hours.
Salpingitis*	Mostly *E. coli* but others can be involved	Reproductive	Hens stop laying. Chronic cases have abdominal distension, hard abdomen on palpation, difficulty walking and may adopt "penguin-like" posture. Poor to guarded prognosis
Pododermatitis/ Bumblefoot**	*Staphylococcus* spp. *Pseudomonas* spp. *E. coli* *Fusobacterium* spp.	Integument/ Skin	Abnormal posture and weight bearing, thickening of the skin (hyperkeratosis), redness, swelling and pain of the foot, ulceration and abscess formation
Colibacillosis	*E. coli*	Various possible	Depends on system affected. Can range from listlessness, ruffled feathers, fever, labored breathing, and diarrhea to sudden death.

Diseases marked with an * can be caused by other non-bacterial factors too. Bumblefoot** is not caused by bacteria but secondary bacterial infections are common.

Chart 2: Treatment and Prevention

Disease (body system affected)	Treatment	Prevention
Chronic Respiratory Disease/Mycoplasmosis	Antibiotic therapy but birds will remain carriers for life	Obtain birds from known *Mycoplasma*-free flocks or depopulate flock and repopulate with clean stock.
Infectious Coryza	Antibiotic therapy but birds remain carriers for life	Vaccine available; multiple doses required.
Fowl Cholera/ Pasteurellosis	Prolonged antibiotic therapy but birds remain carriers for life	Vaccination through use of bacterins.
Infectious Synovitis	Antibiotic therapy with injectables most effective	Obtain birds only from NPIP-certified flocks.

Botulism	Mildly affected birds separated and given mild laxatives, water into crop twice daily, and Epsom salts mixed into feed. Antitoxin available but very expensive.	Eliminate sources of toxin production by prompt removal of all dead animals, controlling fly and insect populations and avoid access to decaying organic matter.
Pullorum Disease/ Salmonellosis/ "White Diarrhea"	Eradicated in the U.S.	Obtain birds only from NPIP-certified disease-free flocks or similar eradication programs.
Fowl Typhoid	Eradicated in the U.S.	Obtain birds only from NPIP-certified disease-free flocks or similar eradication programs.
Paratyphoid	Similar to fowl typhoid	Similar to fowl typhoid
Necrotic Enteritis/ Rot gut	Antibiotic therapy. Supportive vitamin treatment may enhance effectiveness.	Coccidiosis may be contributing factor so implement proper deworming protocol.
Salpingitis*	Antibiotic therapy and most likely surgery to remove the oviduct. Surgery is complicated and risky: poor to guarded prognosis.	None
Pododermatitis/ Bumblefoot**	Combination of pain relief, reducing trauma and pressure on foot, bandaging, foot soaks, antibiotics and surgery as needed.	Proper husbandry practices including but not limited to weight management, proper footing, and perching surfaces.
Colibacillosis	Antibiotic therapy and when possible move birds to clean environment	Good sanitation and husbandry practices

The National Poultry Improvement Plan (NPIP) is voluntary state-federal cooperative testing and certification program. Flocks with NPIP certification are free of various infectious diseases including pullorum disease, fowl typhoid and paratyphoid.