

***E. Coli* (Colibacillosis)**

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The bacterium *Escherichia coli* (*E. coli*) is one of the most important causes of disease in confined or aviary birds regardless of the species. In commercial poultry *E. coli* is by far the most common bacteria associated with disease. All ages of bird are susceptible but the disease is particularly important in young birds either immediately post hatching or within the first few weeks of life. Disease may be much more severe if birds are housed in unsanitary conditions or in areas with high ammonia levels or poor ventilation.

Etiology

There are hundreds of different varieties (serotypes) of avian *E. coli*. Most of these do not cause disease and are part of the normal flora of the intestinal tract of the bird. The disease Colibacillosis is caused by certain strains of *E. coli*. Serogroups 01, 02, and 078 are the most common pathogenic (disease causing) serogroups in poultry. Other *E. coli* serogroups may be associated with respiratory tract infections, generalized infections affecting many body systems and diarrhea in pet birds, ratites, waterfowl and pigeons.

The Disease

E. coli infections can cause several different disease conditions.

Colibacillosis - is the term used for the sudden onset (acute), generalized infection (septicemia) with *E. coli* bacteria in young growing broiler chickens or turkey poults.

Young birds may be infected in the hatchery and these birds develop navel infections and omphalitis.

Young birds can also be infected when they arrive at the farm if they are placed in areas contaminated with the bacteria. Pathogenic *E. coli* is able to survive in barns between crops or it may be tracked into the barn through breaches in biosecurity.



Cellulitis - is the term used for *E. coli* infections of the skin and subcutaneous tissues (areas under the skin). Cellulitis is the number one cause of condemnation in commercial broiler chickens going through processing. Affected birds develop inflammation and accumulation of exudates under the skin of the belly and between their legs. These infections are caused by bacterial contamination of scratches on the backs of the birds as they crowd around feeders and water drinkers.

Modern broiler chickens may grow so fast that as they near market weight they still are not fully feathered. If these birds are crowded and have to compete with each other for feeder and drinker space they often scramble over each other trying to access the feeders resulting in scratches to the skin. Cellulitis can also occur over the head region, likely an extension of an *E. coli* infection of the sinuses and upper respiratory tract.

Broiler chicken with cellulitis of the head. Note the puffy, swollen head. If the skin were to be removed there would be a cottage cheese-like exudates under the skin.



E. coli may also cause airsacculitis, peritonitis, sinusitis, diarrhea and septicemic disease in pet birds.

Septicemia - is the term used to describe generalized bacterial infections affecting many organs in the body. *E. coli* bacteria is a common cause of septicemia in birds. The initial infection may start as a diarrhea or perhaps as a respiratory infection and as the bacteria causes damage to that organ it enters the blood stream and is disseminated throughout the body, often affecting many organs.

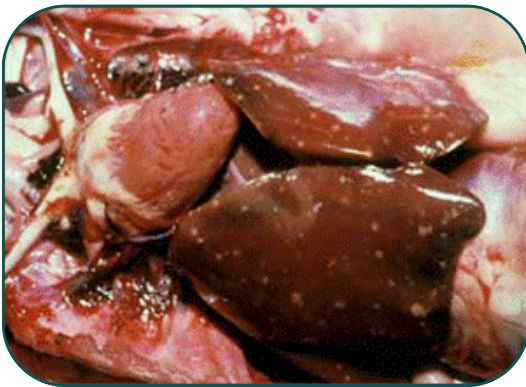
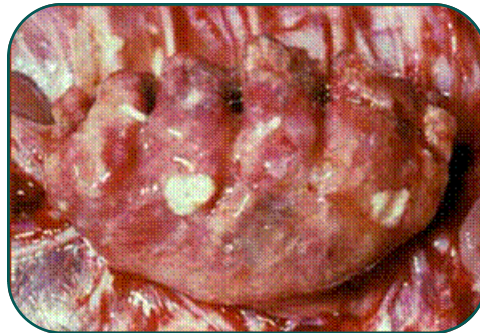
Husbandry practices, particularly poor air quality (eg. high dust levels or ammonia levels), poor sanitation or high levels of stress are common factors that predispose birds to *E. coli* infections.





Left: Young broiler chickens gasping and mouth breathing due to airsaccullitis and E. coli respiratory infection.

Right: Chicken lung that is red and firm and covered with exudate. The pneumonia in this bird is caused by E. coli infection.



Left: Liver with multi-focal depressed, white spots consistent with liver damage caused by septicemic E. coli infection.

Right: Heads of two broiler chickens with skin removed to demonstrate the yellow exudate under the skin (cellulitis) caused by E. coli infection.





Treatment

Treatment is by using the appropriate antibiotics as directed by your veterinarian. Good husbandry and a high level of barn sanitation will reduce the amount of bacteria and reduce the risk.

Prevention

There are no vaccines that successfully prevent *E. coli* infections in birds.

If you raise your own breeder birds and incubate your own eggs then proper egg collection and handling is critical. It is important to ensure that cracked eggs and those with surfaces contaminated by feces are not placed into the incubator. Careful incubator/hatcher cleanliness and sanitation will help prevent early infections in hatching chicks.

Biosecurity, good barn management (ventilation and litter quality) and a good cleaning and sanitation program will decrease the risk of *E. coli* infections by reducing the amount of bacteria present. Slowing the growth rates of birds and making sure they are not over-crowded (i.e. there is suitable floor space and adequate numbers of feeders and drinkers for each bird) will greatly decrease the risk of cellulitis.



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