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### E. coli Infections in Poultry

Cooperative Extension South Dakota State University

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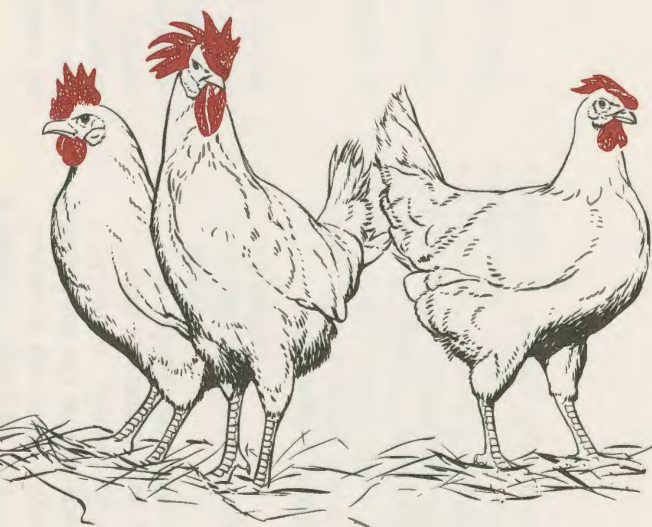
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# E. coli Infections in Poultry



Cooperative Extension Service: South Dakota  
State University and U. S. Department of  
Agriculture

# E. coli\* Infections in Poultry

\**Escherichia coli*

By Thomas E. Lucas, D.V.M., assistant professor, veterinary science, and  
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*E. coli* is a gram negative bacteria. It long has been considered as a harmless and normal inhabitant of the large intestine of all warm blooded animals and of their environments.

This so called "normal" intestinal bacteria has turned out to be a trouble maker of serious proportions. The *E. coli* bacteria often is the cause of secondary or complicating conditions when other disease agents reduce the bird's resistance. Some of these organisms also are capable of causing disease as the primary pathogen.

## Diseases Caused

*E. coli* has been implicated as either the primary or secondary cause of the following diseases of poultry:

1. **Colisepticemia** (generalized infection of chickens and turkeys)
2. **Omphalitis** (navel infections)
3. **Arthritis and synovitis** (joint infections)
4. **Panophthalmitis** (eye infections)
5. **Peritonitis** (infections in the body cavity)
6. **Salpingitis** (infection of the oviduct)
7. **Coligranuloma** (tumor-like infections)
8. **Airsacculitis** (infection of the air sacs)

In addition to being found in the large intestine, *E. coli* can be isolated readily from litter, dust, and water of poultry houses. It may be carried by birds, rodents, people and equipment. This disease agent is difficult to eliminate or control because of its wide distribution and also because of its ability to survive and sometimes multiply under a wide range of environmental conditions. *E. coli* can survive freezing for months.

There are several hundred different serotypes or species of *E. coli*, many of which are harmless and even beneficial to the bird. A few of these serotypes of *E. coli* are associated more frequently with disease conditions than others. These pathogenic strains usually require some help in gaining entrance into parts of the bird where they can cause inflammation, illness, and death. Environmental, nutritional, and disease stresses can provide this help.

## Transmission and Control

Transmission of *E. coli* can be accomplished in several ways. Three common ways:

1. Transmission from contaminated egg shells
2. Breathing of contaminated dust
3. The ingestion of contaminated material, such as feed, litter, and water

*E. coli* is a constant threat to the poultry industry because of its wide distribution and the variety of stresses that may open the door to infection by this organism. Management becomes a vital factor in planning preventive programs to avoid coli infections. The following management factors must be considered in the control of *E. coli* infections in chickens and turkeys.

## 1. Prevent egg transmission by:

- a. Fumigation of hatching eggs at the farm shortly after gathering.
- b. Frequent collection of eggs.
- c. Nest box sanitizers for maintenance of clean nesting material.
- d. Frequent cleansing and disinfection of egg baskets.
- e. Separation of clean and dirty eggs.
- f. Discard dirty eggs; otherwise, hatch them in separate incubators.
- g. Thorough hatchery sanitation.

## 2. Keep mycoplasma-free breeder stock (These organisms often provide stress to the respiratory system).

## 3. Institute and maintain good vaccination programs which minimize stresses on the respiratory system.

## 4. Maintain effective coccidiosis control.

## 5. Provide adequate housing with effective ventilation.

## 6. Clean and disinfect thoroughly between flocks.

## 7. Pelletize or crumbilize feed to destroy pathogenic *E. coli*.

## 8. Institute rigid pest control to prevent recontamination of the environment.

## 9. Minimize any and all stresses.

- a. Minimize physiological stress through optimum environmental conditions — temperature, relative humidity, air pollution, and ventilation.
- b. Avoid nutritional stress by feeding a "balanced ration."

## Cleaning and Disinfection

Clean the poultry house thoroughly between flocks. Walls, ceilings, floors and equipment should be clean of organic matter for it may reduce the effectiveness of the disinfectant. The importance of cleaning prior to the use of the disinfectant cannot be over-emphasized. Any of the quaternary ammonium, phenolic or iodofor disinfectants are effective against

*E. coli* when used according to the label recommendations and applied properly.

**Diagnosis**

Laboratory methods are available for isolating and identifying *E. coli* from diseased birds. Antibiotic sensitivity tests are often used in the laboratory to

determine the most effective drugs for treatment.

Treatment is often difficult because these organisms vary in their sensitivity to antibiotics. *E. coli* has the ability to develop drug resistance and pass the resistance on to succeeding generations of bacteria.

Prevention by sound management practices is the best treatment.

**CONSULT YOUR VETERINARIAN—  
HE'S TRAINED TO HELP YOU PREVENT LOSSES FROM DISEASE**

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