

CLASSIFICATION BRIEF



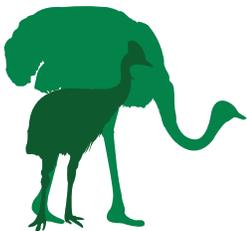
EGG-TYPE CHICKENS



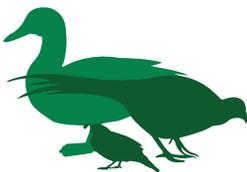
MEAT-TYPE CHICKENS



TURKEYS



OSTRICHES, EMUS, RHEAS,
AND CASSOWARIES



WATERFOWL, EXHIBITION
AND GAME BIRDS



HUMAN HEALTH
SIGNIFICANCE



Pullorum Disease (*Salmonella enterica* serotype Pullorum)

U.S. Pullorum-Typhoid Clean: Pullorum Classifications:

- **U.S. Pullorum-Typhoid Clean**
- **U.S. Pullorum-Typhoid Clean State**
- **Availability:** All types of breeding poultry defined in 9 CFR 145; this classification is required to participate in NPIP.

Etiology

Pullorum Disease (previously known as bacillary white diarrhea) is caused by *Salmonella enterica* serotype Pullorum, a bacterium that is placed in the same species classification as *Salmonella gallinarum* (Fowl Typhoid): *Salmonella enterica* subsp. *enterica* serovar Pullorum-Gallinarum, family Enterobacteriaceae. It is a Gram negative, non-motile, facultative anaerobe. Pullorum Disease and Fowl Typhoid are combined into a single NPIP classification. However, we will describe the diseases separately.

Species Affected and Zoonotic Potential

Chickens are the natural host of Pullorum disease; however, turkeys and most other domestic and wildfowl are susceptible. The organism may be present in raw or undercooked poultry meat or eggs and in rare cases it can cause gastrointestinal illness in humans.

Geographic Distribution

Pullorum disease has worldwide distribution; however, it has been eradicated in commercial flocks in the U.S. The disease may still be present in backyard flocks in the U.S. The disease may be more prevalent outside the U.S.

Transmission

Pullorum disease can be transmitted horizontally through infected birds and vertically through egg transmission. Vertical transmission is the most significant mode of transmission. Vertical transmission occurs through eggs by contamination of the ovum following ovulation or by localization of the organism in the ovules before ovulation. As many as one-third of the eggs laid by an infected hen may be infected with *Salmonella* Pullorum.

Horizontal transmission (respiratory or oral) may occur in the hatchery through contact with infected chicks or poults. Transmission may also occur through feces and contaminated feed, water or litter. Fomites including people, equipment and wild animals and rodents may also transmit the disease.

Disease is maintained in a flock when asymptomatic but infected hens vertically spread

it to their chicks who subsequently spread the disease horizontally.

Clinical Signs

Young chicks and poults: Pullorum disease is typically a disease of young birds. Birds hatched from infected eggs may be moribund or dead in the incubator shortly after hatching. Other signs include sudden death, or death preceded by a rough appearance, huddling, labored breathing, and the characteristic white diarrhea. The highest mortality usually occurs during the second week after hatching, with a decline during the third and fourth weeks.

Adult chickens: In mature or semi-mature flocks, birds may have anorexia, diarrhea, depression and dehydration. Adults are less severely affected by pullorum disease and may simply become carriers.

Turkeys: Signs of pullorum disease or fowl typhoid in turkeys include: thirst, anorexia, listlessness, a tendency to move away from healthy birds, and green to greenish-yellow diarrhea. Deaths may occur without clinical signs.

Prevention and Control

Prevention of the disease is best obtained through management practices aimed at preventing the introduction of disease into the flock. Disease control is done by testing and eliminating carriers. Eggs and birds should be obtained from flocks free of pullorum disease. Proper sanitation and biosecurity measures must be implemented to reduce the risk of disease introduction through contaminated feed, and other outside sources.

Diagnosis

Definitive diagnosis of pullorum disease is based on the isolation and identification of the organism. A tentative diagnosis may be made based on flock history, clinical signs, mortality and lesions. Serology may also be helpful in diagnosing an infection, however caution must be exercised with respect to negative test results as agglutinating antibodies may appear 3-10 days following infection. Positive results must also be viewed with caution due to cross reactivity with other Group D salmonellae.

This information was developed by staff veterinarians at the CFSPH and approved by APHIS for use as training materials for the USDA APHIS National Veterinary Accreditation Program.



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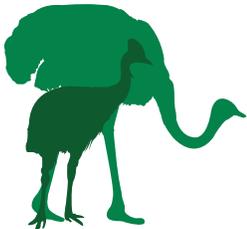
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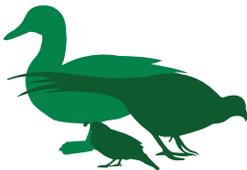
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Testing Requirements

Initial testing for this disease in chickens is usually done with the rapid whole-blood test. A drop of whole blood is mixed with a stained antigen preparation on a glass plate. If antibodies are present in the blood, the antigen will be agglutinated and clumps will be visible. This is a rapid, easy to conduct test that can be performed on the farm by Authorized Testing Agents. Reactors on this test must be submitted for additional testing by authorized laboratories. Turkeys must have blood samples submitted to an authorized laboratory for testing; they are not eligible for the rapid whole-blood test.

Approved Tests

Under the NPIP, the official blood tests for pullorum disease and fowl typhoid are: standard tube agglutination test, microagglutination test, enzyme-labeled immunosorbent assay (ELISA), rapid serum test, and the stained antigen, rapid whole-blood test (except turkeys).

Reference

- Saif, Y.M, et al., Diseases of Poultry, 12th ed. Blackwell Publishing, Ames, IA, 2008.

