

Case Definition

Fowl Typhoid (*Salmonella enterica* subspecies *enterica* serovar *Gallinarum* biovar *Gallinarum*) (Notifiable)

April 2022

1. Disease Information

1.1 General Disease and Pathogen Information: Fowl typhoid in chickens and turkeys is caused by *Salmonella enterica* subspecies *enterica* serovar *Gallinarum* biovar *Gallinarum*. The disease is often observed in the later growing period and in mature stock. It has been reported in chickens, turkeys, quail, guinea fowl, pheasants, peafowl, grouse, parrots, sparrows, ostriches, and ring-necked doves. Both vertical and horizontal transmission occurs, and birds can become chronic carriers, passing the bacteria to their offspring in eggs. Horizontal transmission occurs through respiratory and oral routes. Fowl typhoid has been eradicated from commercial poultry in many developed countries including the United States and Canada but may persist in backyard poultry flocks and game birds.

1.2 Clinical Signs: Clinical signs include acute septicemia which mainly affects mature birds and may be particularly severe in commercial laying flocks. Signs may include: decreased appetite, depression, dehydration, weight loss, ruffled feathers, and watery to mucoid diarrhea. A progressive loss of condition can lead to anemia with pale, shrunken combs. Post-mortem lesions include swollen, friable liver, with or without necrotic foci, enlarged spleen and kidneys, anemia, and enteritis.

2. Laboratory Criteria

2.1 Agent Isolation and Identification: Samples should not be taken within 2-3 weeks of antimicrobial treatment. Swabs or aseptically collected samples from infected tissues such as cecal tonsils, liver, gall bladder, and spleen, or intestinal and cloacal contents (bagged separately from tissues) should be used for diagnostic testing. Tissues are preferable to fecal and environmental samples. More detailed information regarding sampling and testing protocols can be found in resources such as the National Poultry Improvement Plan (NPIP) program standards. Culture is by selective enrichment and plating on selective and non-selective media. Suspect colonies can be identified as *Salmonella* species by polymerase chain reaction (PCR), matrix-assisted laser desorption ionization-time of flight (MALDI-TOF), or biochemical testing. Isolates identified as *Salmonella* should be serotyped.

2.2 Agent Characterization: *Salmonella* ser. *Gallinarum* var. *Gallinarum* can be identified by serotyping with biochemical testing or whole genome sequencing (WGS).

2.3 Serology: Chicken serum samples can be tested by the rapid whole blood plate agglutination test; however, false positives can be seen with ducks and the test is not approved for use in turkeys. In the laboratory, serum is tested via the rapid serum plate agglutination test, the tube agglutination test, or the microagglutination test. Any positive reactors should be confirmed by culture from post-mortem tissues.

3. Case Definition and Reporting Criteria

3.1 Suspect Case: growing and mature birds with clinical signs, history, or epidemiology consistent with Fowl Typhoid.

3.2 Presumptive Positive Case: a bird with compatible clinical signs **AND**

3.2.1 positive serum rapid plate agglutination (chickens only); **OR**

3.2.2 positive tube agglutination; **OR**

3.2.3 positive microagglutination test.

3.3 Confirmed Positive Case: a bird with compatible clinical signs **AND**

3.3.1 isolation and identification of *Salmonella* ser. Gallinarum biovar Gallinarum.