

# Fowl Cholera

Extended Version

**Classic case:** Young adults, **SUDDEN DEATH** or depression, ruffled feathers, green diarrhea

**Presentation:** *Pasteurella multocida*

- Outbreaks most commonly associated with:
  - Chickens, **turkeys (most severe)**, ducks, geese
  - Semi-mature & mature chickens
  - Physiologic stress (egg laying cycles)
  - Cooler seasons
  - Commonly complicated by **secondary infection**

## Two Forms

### 1. **ACUTE form** (*Acute septicemia*)

- Sudden onset
- High morbidity & mortality

#### Clinical signs:

- Depression, fever, ruffled feathers
- Tachypnea, cyanosis (wattles, comb)
- Anorexia, mouth discharge (mucoid)
- Watery, whitish diarrhea progressing to green mucoid
- **Survivors may become chronically infected carriers**

### 2. **CHRONIC form** (*Survivors of acute form or low virulence strain*)

May last 3 to 4 weeks or persist indefinitely

- Asymptomatic **OR**
- **Localized infections** throughout body
  - Exudative conjunctivitis, sinusitis, hypopyon
  - Exudative inflammation of:
    - Face, wattles, sternal bursa
    - Foot pads, leg and wing joints, tendon sheaths
  - Respiratory tract infections
    - Exudative pharyngitis
    - Dyspnea, tracheal rales
  - Middle ear, meningeal, cranial bone infections
    - Torticollis

**DDX:** Infectious coryza (*Haemophilus paragallinarum*), mycoplasmosis, fowl pox, Vitamin A deficiency, infectious laryngotracheitis, avian influenza, infectious bronchitis, erysipelas, acute colibacillosis, *Avibacterium gallinarum*, *P. gallinarum*, *P. haemolytica*, *P. anatipestifer*



Fowl cholera: Swelling of **wattles**, sinuses, foot pads, sternal bursa, joints.



Chronic localized fowl cholera: Torticollis from meningeal infection



Chronic localized fowl cholera: Infraorbital sinus with yellow caseous exudate is a typical lesion in turkeys.



Chronic localized fowl cholera: Hypopyon anterior chamber.

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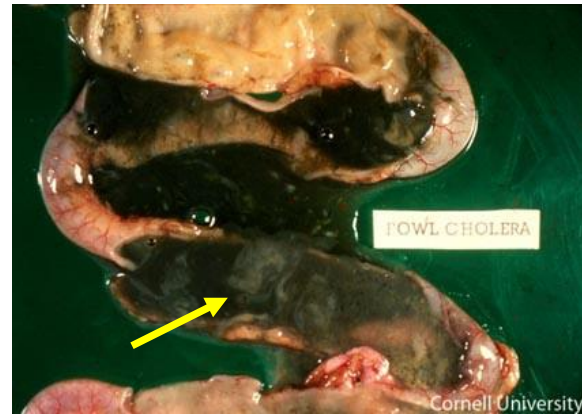
Extended Version

## Test(s) of choice:

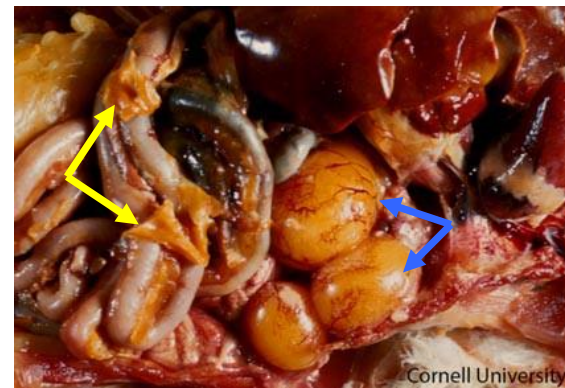
- **Field diagnosis** – Clinical signs, lesions
- **Necropsy**
  - Acute form
  - Lesions associated w/ **vascular pathology** (COMMON)
    - Marked hyperemia
      - Veins of abdominal viscera
        - **Duodenum**
        - Ovaries
    - Visceral ecchymotic/petechial hemorrhages
      - Lungs
      - Intestines
      - Abdominal fat
      - Heart
    - Digestive tract
      - Congestion
      - Excessive mucous
      - Green diarrhea
    - Pneumonia
      - **Especially turkeys**
    - Fibrinous pericarditis, pleuritis
    - Pericardial & coeleomic cavity fluid
    - Hepatomegaly, coagulative necrosis (virulent strains)
    - Ovaries
      - Flaccid follicles
      - Egg yolk peritonitis

## Chronic form

- Localized exudative infections throughout body
  - Hock joints, foot pads
  - Oviduct, coeleomic cavity
    - Wattles, sinuses
  - Calvarial bones, middle ear
  - Meninges, air spaces
    - Respiratory tract
    - Pneumatic bones
- Pneumonia: Especially turkeys



*Fowl cholera: Blood, severe congestion, green diarrhea (yellow arrow) in intestines*



*Fowl cholera: Chronic egg yolk peritonitis, ruptured egg follicles (yellow arrows) and unruptured follicles (blue arrows).*



*Fowl cholera: Swelling of middle ear.*



*Fowl cholera: Purulent exudate in facial swellings (lanced wattle).*

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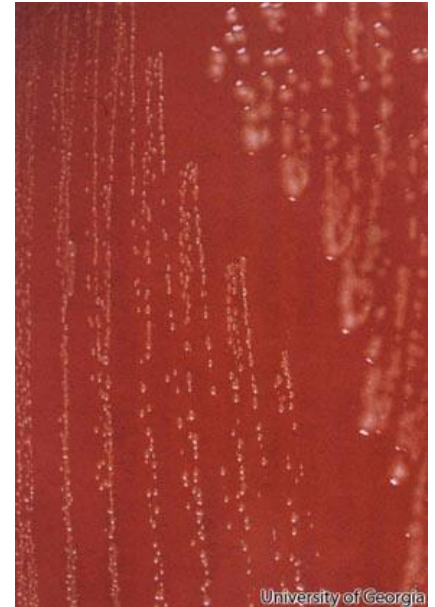
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## Test(s) of choice: (continued)

- **Microscopic exam**
  - **Impression smears**
    - Lesions, bone marrow, blood, liver, heart
      - Gram-stain negative bipolar rods
      - Wright's stain or methylene blue demonstrate bipolar morphology
- **Bacterial C & S**
  - **Culture** samples
    - Liver, lungs, spleen, wattles, affected joints
    - **GROWS** readily on blood agar
    - Serotype bacterial isolate
      - 16 somatic serotypes
        - 1, 3, 3X4 (most common)
    - TEST isolate for antibiotic sensitivity and resistance

## Rx of choice:

- **NOT generally practical in commercial poultry**
  - Rx usually small flocks, individual birds
- **Supportive care**
- **Antibiotics**
  - Early treatment
  - Adequate dosages
  - Sensitivity testing
  - **Sulfonamides**
    - In feed or water
    - Usually controls mortality
  - **Tetracyclines**: High levels in feed (0.04%), drinking water or parenteral
  - **Penicillin**: **Sulfa-resistant** infections



Blood agar- Two different colonies of *Pasteurella*.

Pathogenicity correlates to appearance: Smooth colony on L is more pathogenic. Rough colony on R is less pathogenic.

## Prognosis:

- Decreased mortality in birds treated early
- Birds with caseous sinusitis require surgical removal of exudate to prevent chronic shedding

## Prevention:

- **Vaccination**
  - Live and inactivated vaccines
    - Inactivated bacterins
      - Trivalent whole cell products
      - Most common serotypes
    - Autogenous vaccines
- **Eliminate contact between poultry flocks and reservoirs**
  - Wild birds, rats, mice, cats, raccoons, skunks, other
  - Sick and dead birds
  - **Very effective in controlling disease**
- **Strict biosecurity**
- **Strict sanitation protocols** *P. multocida* is susceptible to disinfectants, sunlight, drying, heat



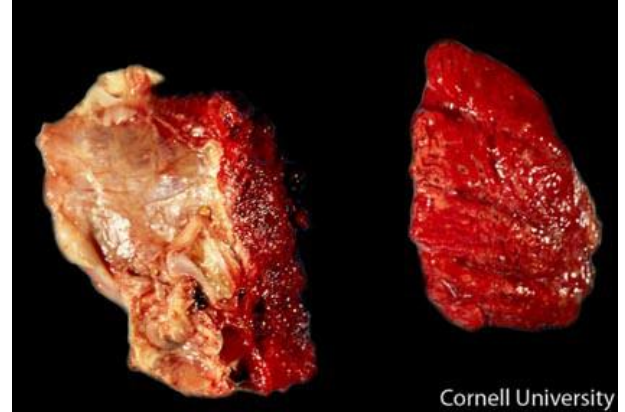


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**Pearls:** Periodic enzootic outbreaks occur in most countries, worldwide

- ***Pasteurella multocida*** is causative organism
- **Chronically infected birds** = major reservoir
- Transmission:
  - Horizontal transmission
  - Direct contact, fomites
  - Bite wounds, cannibalism (sick, dead birds)
  - Contaminated food & water
  - Excretions from mouth, nose, conjunctiva
- *P. multocida* infects a wide variety of animals, however, strains isolated from non-avian species generally do not produce fowl cholera



*Fowl cholera in a turkey: Severe fibrinous exudate on pleural surface lungs.*

*Pneumonia is a common manifestation of *Pasteurella multocida* in turkeys.*

## Images and links worth a look:

- [Fowl cholera](#), clinical signs and gross lesions, Cornell Atlas of Avian Diseases
- [Pasteurella multocida](#), Australian Center for International Agricultural Research (ACIAR)

**Refs:** [Cornell Atlas of Avian Diseases](#) and Merck Manual, 10<sup>th</sup> ed (online): [Fowl cholera](#), Images courtesy of Cornell Univ., Atlas of Avian Diseases

## My Notes: