

# Fowl Cholera

## Introduction

With the recent emergence of ORT (*Ornithobacterium rhinotracheale*) in chickens and turkeys in the Fraser Valley, we cannot lose sight of what could be called a "close cousin", Fowl Cholera. Many of the clinical and pathological characteristics of these two diseases are shared. So, when faced with a respiratory disease, we must be careful that both ORT and Cholera be considered in the rule-out process.

## The Cause of Fowl Cholera

Fowl cholera is caused by a common pathogenic bacterium known as *Pasteurella multocida*. Unlike ORT, *P. multocida* grows readily in standard culture conditions in the lab. In fact, *P. multocida* or *E. coli* can overgrow ORT if special conditions are not followed in the lab when trying to isolate ORT. *P. multocida* has many subtypes, and some strains are more pathogenic than others.

## Hosts and Transmission of Fowl Cholera

Fowl Cholera is predominantly a disease of chickens and turkeys, but is also a serious disease of ducks and geese. However, many other birds, including game birds and companion birds are susceptible to infection. In chickens, mature birds are much more susceptible than younger birds, so this disease is generally one of breeder flocks. All ages of turkeys are affected and the turkey is more susceptible than the chicken. Like Fowl Cholera, ORT is also a disease that can affect turkeys and chickens and is more serious in older than young birds.

Initial entry of Fowl Cholera into a flock can be difficult to determine. While bird-to-bird spread is relatively easily accomplished, the organism does not survive well away from a host for long periods. The major source of infection is likely to be chronically infected

Once in a flock, transmission of the organism can readily occur. The greatest concentrations of *P. multocida* will be found in oral, nasal, and ocular excretions. These contaminated excretions will contaminate feed and water, providing an excellent source of infection for other birds in the flock. Chronically infected birds are the most important reservoir of disease in a flock, and such birds will shed the organism for as long as they live. Due to their cannibalistic nature, picking at birds dying of the disease can also infect chickens. But *P. multocida* can also infect and reside in the membranes of other birds and animals that may inhabit barns. Pigeons, sparrows, and rats are very capable of carrying the disease and serving as a reservoir for the farm.

flocks. Wild birds, animals such as rats, and flies can potentially carry the organism into a flock. The most likely source of infection, however, is probably human. Humans can become infected by the organism, without necessarily causing any illness, and shed it via excretions from the nose and mouth. *P. multocida* can survive long enough to infect a flock when carried in by contaminated clothing or equipment. The disease is not egg-transmitted.

## **Clinical Signs of Fowl Cholera**

Like ORT, Fowl Cholera is primarily a disease of the respiratory system, although other organs can be affected. In individual birds, the disease is seen in two general forms, either acute or chronic, although the line between the two forms is not discreet.

In the acute form, the only clinical expression seen may be dead birds. The period of acute illness is very short and consists of depression and lethargy. Birds may ruffle their feathers in response to spiking fever. There may also be a mucous discharge from the mouth and respiration rate can be increased. A watery, whitish diarrhea can be seen in some birds. The lesions seen in birds dead of acute illness are highly variable and can include generalized reddening of the tissues, small hemorrhages around the heart and lungs and on the membranes of the abdominal cavity, swollen livers with numerous yellowish spots, and increased amounts of fluid in the heart sac and abdominal cavity. The yolks of hens in production may appear to be regressing.

The chronic form of Fowl Cholera can be seen in birds surviving the acute form and in those infected by strains of the organism that have a low virulence. The presentation is generally one of localized infection, where the bacteria has infected and colonized various tissues. Generally infection involves the respiratory system, including lungs, sinuses, nasal passages, ocular tissues, and air sacs, including those in the bones. The disease can also settle in areas that are finely vascularized, such as joints, meninges, and soft tissues like the wattles. Swollen eyes and wattles are classical signs of Fowl Cholera.

## **Prevention and Treatment of Fowl Cholera**

The best prevention against Fowl Cholera is biosecurity. All of the basic steps of a solid biosecurity program are required to prevent entry of the disease, and human entry into the barn is probably the most important component. Only those who really need to enter should be allowed in and they should be instructed to wear clean coveralls, disposable boots, and head cover. A thorough hand washing with a disinfecting soap should also be required, as the hands are an important instrument of disease transmission.

Because infected birds are the most important source of the disease, birds from other farms should not be brought into a flock. At the very least, if males are needed to spike a flock, they should come from a farm on which the disease history is well documented and is demonstrated to be free of Fowl Cholera. Ideally, only one age of birds should be on a farm. If the farm is multiage, then biosecurity among barns becomes more difficult, and very strict biosecurity measures must be practiced.

Wild bird and rodent control is another important component of biosecurity, especially if faced with an infected flock. These animals can serve as a reservoir for new flocks entering the farm.

A thorough sanitation program for barns and equipment is also important, especially to prepare a farm for a new, uninfected flock. Of greatest importance is cleaning and disinfection of the water and feed equipment.

## **Conclusion**

Fowl Cholera is an important disease of turkeys and chickens, especially breeder chickens, that must be differentiated from ORT. The best means of prevention of Fowl Cholera is through biosecurity and sanitation. Once on a farm, however, its control becomes very complex, and must be dealt with promptly and aggressively.

A variety of vaccines are available for prevention of Fowl Cholera. This route should be chosen, however, only as a tool for flocks at high risk of infection, such as those close to a neighbouring infected flock. Vaccination against Fowl Cholera has its own inherent risks. For example, live vaccines, while giving broad-spectrum protection, can also cause significant side effects. Killed bacterins, on the other hand, give good antibody levels, but the protection offered is specific only to the strains injected, and may be incomplete.

Treatment for Fowl Cholera is really very much a last resort. For treatment to be relatively effective, it must be carried out aggressively and very early in the course of the disease, before a significant number of birds in the flock become chronically infected. Treatment should be done on the basis of an antibiotic sensitivity screen done of the organism isolated from the outbreak. Treatment may reduce the effect of illness on the flock, by reducing mortality and allowing maintained production levels. However, once chronic infection is present, the benefits of treatment may be difficult to see. Furthermore, treatment will not necessarily remove the offending bacteria from the flock, so it will remain a reservoir both for neighbouring flocks and, potentially, for the next flock.

## **Acknowledgements:**

**Bill Cox**

DVM, Dip. Path