



Bacterial Diseases of Psittacine Birds

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Bacterial diseases are one of the most common causes of death of newly imported psittacine birds. These diseases can be devastating and can spread rapidly through a flock of susceptible birds. These diseases can also be important to the aviculturist as they may strike conditioned birds after long term captivity or new purchases whether imported or domestically raised.

Many bacterial diseases have been described in caged birds. I will discuss only three bacteria which are the most commonly encountered in newly imported psittacines. These bacteria, *Escherichia coli* (*E. coli*), *Salmonella*, and *Pseudomonas* are in a group called gram-negative rods. Most authorities agree that as a group gram-negative rods are not a part of the normal bacterial flora of seed eating birds. These bacteria however may be found in low numbers in the bird or his environment and be kept under control by the birds natural immune defenses and normal bacterial flora. An upset in these normal defenses may allow these bacteria to proliferate, invade and cause diseases.

These bacteria are also found in the environment making infection difficult to prevent. *E. coli* is normally found in the gut of mammals and is therefore shed in the feces. *Pseudomonas* may be found on hair, feathers or plants. *Salmonella* is capable of causing disease in many species of mammals and birds, some birds and mammals may however become carriers of *Salmonella* with no apparent ill effects. Once eliminated in the feces *Salmonella* may live for extended periods of time in moist places or soil. The initiating factor is these diseases is usually stress. Repeated stresses sap the vigor of birds and decrease their normal defenses allowing these bacteria to proliferate causing disease.

In newly imported birds these stresses include;

Shipping — Birds may be in transit for extended periods of time during which time they are exposed to changes in temperature, do not eat and drink properly and become fatigued.

Changes of diet — From the wild to the breeding aviary birds may undergo several changes in diet.

Crowding — Unavoidable crowding during shipping and quarantine concentrates pathogenic bacteria and increases the chance of spread.

Prolonged antibiotic therapy — As required during quarantine, for the control of psittacosis, decreases the birds normal flora and allows the pathogenic bacteria to proliferate without competition.

In stable avaries stresses are also present which may reduce the resistance to disease. They include:

Rearing of young — This is a very stressful period for the parents and a very susceptible time for the young birds.

Concurrent disease or parasites — May weaken the bird making him more susceptible to bacterial diseases.

Disturbances — by neighborhood cats and dogs, rodents or people.

Severe weather.

Disease is produced when a susceptible host, which may be stressed severely comes into contact with these bacteria, or the low levels in the birds gut are no longer successfully inhibited.

E. coli is a common bacteria in polluted environments. It may be introduced into a group of birds by a carrier bird, mammals such as rodents, improper hygiene by food handlers or contaminated food or water.

Birds are most commonly infected by consuming these bacteria however they

may also become infected by inhalation. The first signs usually noticed are diarrhea, decreased appetite, rapid weight loss, depression, and ruffling.

The diarrhea is usually a bright yellow green but may be brownish, bloody or whitish. The disease is initially an infection of the gut but may spread rapidly throughout the bird by gaining entrance to the blood stream. The liver, kidneys and heart are usually severely damaged however other organs may also be affected as well as the entire vascular system. Death can occur as early as one to three days after onset of clinical signs. If a bloody diarrhea occurs death usually follows in 5 to 10 hours. The disease can also be chronic especially in strong adult birds, lasting weeks to months.

Early antibiotic therapy is imperative to slow the spread from the gut into the blood stream. Furacin is my drug of choice for initial therapy when treating in a flock situation, and will clear up many early *E. coli* infections. Furacin should be used in the water at the dose recommended for poultry (this will vary with the brand used). Dosage rates must be carefully followed as furacin is toxic in overdose. *E. coli* rapidly becomes resistant to antibiotics therefore culture and sensitivity testing are very important. Other drugs which are useful are gentamicin, neomycin, kanamycin and cephalosporins. Due to the extensive use of tetracyclines during quarantine, most strains of *E. coli* found in newly imported birds are resistant to tetracyclines.

If the infection has entered the blood stream the antibiotics should *initially* be given intravenously in which case gentamicin and chloramphenicol are effective.

Supportive care is very important in the treatment of *E. coli* disease. Due to the decreased appetite and the diarrhea usually encountered, the bird usually does not consume enough food and proper feeding is very important. Fruits should not be withheld, they are often the only food a sick bird will accept and contain needed moisture and vitamins. Small amounts of orange, apple and banana may be offered. Many sick birds, especially young birds, will eat monkey chow or puppy chow soaked in hot water. This should be cooled to approximately 100 to 110°F before feeding. Some of this food may be hand fed or fed with a spoon. Other foods readily accepted include cooked rice, cooked or raw corn, peanuts, peanut butter, bread, honey, cheese and of course any foods normally well accepted. If much weight is lost then forced feeding may be necessary. This is done by placing a tube into the

bird's crop. High protein monkey chow can be used to which honey, fruit, vitamins, electrolytes and caloric supplements are added. Yogurt may be added to replace the normal bacterial flora. Kaopectate may be used to soothe the gut.

Salmonella: Birds are infected, as in *E. coli* disease, by fecal contamination. This may be from contact with infected birds, contaminated foods or water, or improper hygiene practices. Carrier birds may be present and when stressed may begin to shed *Salmonella* or may break down with the disease. This, too, is usually a disease of the digestive tract which may be confined to the gut or spread through the birds system by invasion of the bloodstream. In most cases, as in *E. coli*, the liver, kidneys, heart and blood vascular system are most severely affected. Death may occur 1 to 3 days after the first signs are seen. Cases can be very acute or symptoms so obscure as to go unnoticed even by the most diligent aviculturist. Salmonellosis may also become chronic and some birds can even become carriers although they appear to be completely cured.

The symptoms are very similar to *E. coli* disease with the yellow-green to bloody diarrhea, loss of appetite, rapid weight loss, depression and ruffling. In the chronic form it may produce a wasting disease.

Again antibiotic therapy must be instituted immediately. Furacin is good for treating the flock while waiting the results of cultures and antibiotic sensitivity testing. Chloramphenicol orally or intravenously provides good results in many cases and gentamicin is often effective if given by injection. Sulfa drugs may be helpful in mild cases. Don't be lead astray by very sensitive strains of *Salmonella*. Many drugs which may appear effective in your testing program will not be effective in the bird.

Supportive care, as in *E. coli* disease, is important in the treatment of salmonellosis. Proper feeding is of the utmost importance, however, other aspects of patient management should be remembered including:

Warmth — Birds should be kept in a warm, quiet room or in an incubator.

Vitamins and electrolytes — should be added to the water. It may be helpful to give B complex and Vitamin C by injection.

Bacterial replacement — is very helpful both during and after antibiotic therapy. Fruit flavored yogurt is readily accepted by many birds. Acidophilus powder or a product called Micromate may be used.

Salmonella can not live in an acid environment therefore vitamin C or vinegar may be added to your tube food to make the gut slightly more acidic and less in-

favorable to the *Salmonella*.

Cleanup and disinfection is very important when dealing with *Salmonella* due to its ability to live for long periods of time in the environment. Whitewashing has been used in many poultry houses following thorough disinfection. In flights with soil floors the soil should be acidified to a pH of 3.4 in order to inhibit the growth of *Salmonella* in the soil. Sodium bisulfate may be used for this purpose. Recovered birds should be held for at least a year and checked carefully for *Salmonella* before using as breeders.

Pseudomonas may be encountered as a disease of the digestive system giving symptoms very similar to those previously described. However it is more commonly found as a pathogen of the respiratory system.

It commonly invades the lungs after a mild respiratory illness has weakened the bird. It may also occur as an upper respiratory infection. This disease may be very acute with the bird dying with no apparent illness or after a very short illness. In the chronic form large abscesses may form within the lungs. The bird will show mild to severe respiratory distress. Diarrhea may be present and the infection often spreads throughout the bird's system. The bird may become very weak, have a decreased appetite and rapidly lose weight.

Culture and antibiotic sensitivity testing is helpful; however, specimens are often hard to obtain in the acute respiratory form. Initial therapy, if this disease is suspected, should be with gentamicin. The most successful therapy we have found is by the use of gentamicin and carbenicillin together however they should not be mixed as they are physically incompatible. Warmth and forced feeding should be provided and bacterial replacement may be helpful.

In all of these diseases stress plays a major role in producing the disease process. However the bacteria must also be present. Although they are difficult to eliminate from the environment good hygiene will help greatly in their reduction. Bowls and perches should be regularly washed and disinfected. Care should be taken that perches are not placed over bowls or other perches. Mammals, especially rodents, should be excluded from aviaries. Stresses should be reduced as much as possible, except of course, the raising of young.

In all of these diseases hospitalization may be required. Your veterinarian can be invaluable in providing a diagnosis, bacteriology, medications and intensive care for your birds.