

DISEASE CONTROL IN THE AVIARY

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by

Susan L. Clubb, D.V.M.
Pet Farm, Inc.
5400 N.W. 84 Avenue
Miami, Florida 33166

The most important aspect of disease control is prevention. Many diseases can be prevented by proper planning, quarantine, husbandry, cleanliness, pest control and choice of avicultural specimens. When a disease outbreak does occur, however, a quick and accurate diagnosis of the problem and proper handling of an outbreak can cut losses and prevent disaster.

This paper will outline preventative measures for selected diseases which may occur in the aviary. Steps to control each disease in the event of an outbreak, will also be outlined.

GENERAL PREVENTATIVE MEASURES

- I. Procure birds only from reliable sources. Don't be tempted by the bargain bird. Beware of smuggled birds.
- II. Quarantine all new arrivals preferably for at least 30 days or maybe more before adding to your established flock. This is the most important preventative measure that can be taken as many major diseases will become evident during quarantine. This is also a good time for parasite and disease screening, conditioning the bird and converting it to it's new diet and climatic conditions. The following procedures should be considered during the quarantine period:
 - A. A complete physical exam
 - B. Testing for chlamydia
 - C. Fecal and/or choanal culture
 - D. Parasite check

III. GOOD NUTRITION AND PROPER FOOD HANDLING

- A. Provide a high quality balanced diet. Well nourished birds are more resistant to bacterial and parasitic diseases, but may be more susceptible to viral diseases.
- B. If bowls cannot be washed daily (they seldom can in a large collection) they must stay in the cage and a separate utensil used to scoop seed into the bowls.
- C. When watering, care must be taken not to spread disease organisms by dipping the hose in each bowl or putting hands into each bowl. Water should be allowed to run through hoses for a while prior to filling bowls, to dislodge bacterial growth which may occur in hoses. Vitamins should not be added to water unless bowls can be washed daily.
- D. Feed should be refrigerated or stored in vermin proof containers.
- E. Soft foods should be prepared fresh daily and removed from the cages daily to prevent souring.

IV. FACILITIES DESIGNED FOR EASY MAINTENANCE

- A. Suspended cages with wire floors provide the best protection against the spread of disease while minimizing maintenance. They should be spaced so that each pair of birds is physically isolated.
- B. Food and water bowls and nest boxes should be placed for easy access from the outside of the cage and should not be placed where they will become contaminated by feces.
- C. Stacking of cages should be avoided unless barriers are provided to prevent fecal contamination in lower cages.
- D. If flights are used they should be designed so they can be serviced and cleaned from the outside to avoid entering the bird's living space and tracking in pathogens. The lack of intrusion also gives the bird a sense of security which may contribute to breeding success. It is very important to make sure birds are free of parasites before placing them in clean flights. Water should not be allowed to flow from one flight to another.

V. ESTABLISH DISEASE CONTROL PLAN IN CASE OF AN OUTBREAK

- A. Plan extra cleaning measures. Consider suitable people to provide extra manpower if needed. Consider housing for birds which may need to be isolated away from the primary facility.
- B. Establish a working relationship between the aviculturist, the local veterinarian, laboratories and a pathologist who is knowledgeable in the diseases of exotic birds before you have problems. These steps taken in advance could save precious time in the advent of an outbreak.

MEASURES FOR CONTROL OF SPECIFIC PROBLEMS

I. VVND (Viscerotropic Velogenic Newcastle Disease)

A. Prevention

- 1. Don't buy Mexican psittacine species unless you are sure of the origin. Mexico has been closed to legal export since 1981. Young Mexican parrots (Double Yellow Heads, Lilac Crowned Amazons, Mexican Red Headed Amazons) are commonly smuggled and often carry Newcastle Disease.
- 2. Be wary of baby Yellow Naped Amazons which do not have quarantine or breeder bands. They are often smuggled from Central America and sold for a bargain price.

B. Action in a suspected outbreak

- 1. Notify the office of the USDA in your area. VVND is a federal reportable disease. USDA officials will inform you of any action to be taken.
- 2. Do not move any birds into or out of the aviary.

II. PACHECO'S PARROT DISEASE

A. Prevention

- 1. Avoid known carrier species (Patagonian and Nanday conures) unless captive born or screened serologically.
- 2. If you keep known carrier species they should be in a separate room or area and fed last each day. Cages should be suspended and arranged so that feces do not

fall into one cage from another. Flights should be arranged so water does not flow from cages of suspected carriers to susceptible birds.

3. Negative viral cultures do not eliminate the potential of a carrier state as the virus may be shed intermittently even after several years. Stresses and breeding activity may initiate shedding. There is no commercially available screening test at this time.
4. Vaccine may be available in the near future. Vaccination of flocks which include carriers or where disease has been present in the past would be a good preventive measure. Vaccination in the face of an outbreak is not recommended.

B. Action in an outbreak

1. A rapid diagnosis is vital if Pacheco's is suspected. A pathologist familiar with psittacine diseases must be consulted for an accurate diagnosis. Rapid techniques include electronmicroscopy or light microscopy of tissues from an infected bird, or fluorescent antibody tests. Confirm by virus isolation.
2. Do not handle the birds, unless absolutely necessary, as this may result in spread of the disease. Ideally birds should be housed singly or paired in cages with wire floors to allow feces to fall through. If birds are to be isolated, the entire cage should be moved and hands cleaned before touching another cage. If birds are in flocks or colonies, moving the birds may be desirable.
3. Avoid fecal contamination of cages, food and water bowls and feathers. The virus is easily spread on fomites such as hands, gloves, pets, towels and cages. Bowls should be placed to avoid fecal contamination.
4. Wash and disinfect all food and water bowls daily. A bucket of disinfectant should be carried and hands dipped between each cage to prevent spread from cage to cage. Chlorhexidine is mild to hands and effectively controls the virus.
5. Food pans with disinfectants should be used when entering or leaving a room. Surfaces commonly touched should be disinfected daily including door knobs, re-

frigerator handles, equipment used in food handling such as carts, feed buckets, scoops, and cleaning equipment such as mop handles.

6. Chlorhexidine added to the drinking water at 20cc per gallon may kill virus present in water and clinically appears to slow the spread of the disease.
7. Obviously infected birds should be euthanized or isolated. Treatment of sick birds is usually unrewarding and can contribute to the spread of the disease. The use of Acyclovir (an antiviral drug) has been reported as successful by some authors. This drug is very expensive, and in the experience of this author, not effective in the treatment of Pacheco's possibly due to the rapid hepatic necrosis associated with this disease.
8. Separate personnel should be used to care for exposed and unexposed birds, or exposed birds should be fed last each day.
9. An outbreak will usually run its course in 2 to 3 weeks unless new birds are infected.

III. PARROT POX

A. Prevention

1. Carrier state does not appear to exist in psittacines. Incubation period is 7 to 14 days. Routine 30 day quarantine of new arrivals will prevent introduction of the virus into a collection.
2. Mosquitoes can carry pox for several weeks after biting an infected bird. Mosquito-control is vital if infected birds have been close by. The disease can be spread from a neighboring farm by mosquitoes.
3. Commercial poultry and pigeon pox vaccines are not effective in controlling parrot pox. A licensed parrot pox vaccine may be available in the near future.

B. Action in an outbreak

1. Isolate infected birds from susceptible species in a mosquito proof area. Treatment will drastically reduce mortality.

1. During quarantine of new stock, test birds for chlamydiosis by culture or serology.
2. Exclude wild birds, especially pigeons, from contact with breeding stock if possible.
3. On farms where an intermittent problem exists annual treatment may be required. Best treatment time is in the fall and all birds should be treated.
4. Treatment does not insure freedom from infection. In-apparent carriers are common and recovery does not confer immunity.

B. Action in an outbreak

1. Treat all exposed birds with chlorotetracycline in the feed or doxycycline. Test unexposed birds which you may elect not to treat. Most breeders will abandon their nests when treatment is started; babies or eggs should be pulled or treatment delayed until babies are fledged.
2. For handfeeders CTC or doxycycline can easily be added to handfeeding formula. Antifungal drugs should be used in conjunction with tetracyclines.
3. Completely clean the premises, especially if indoors, while the birds are on medication, paying attention to the elimination of dust. Air conditioner filters should be cleaned.
4. Treatment of contact birds must not be discontinued while some birds remain untreated. Treated birds are immediately susceptible to reinfection when medication is discontinued.

C. Treatment

1. Amazons, African Greys, Cockatoos and other medium sized parrots will usually accept parrot pellets with 1% CTC. After the birds are eating, no other foods should be offered for 45 days.
2. Macaws and some other individual birds (especially those which eat predominately sunflower seeds) may be very difficult to convert to medicated pellets, and

best luck may be achieved by preparing a cooked corn mash to which CTC or doxycycline is added. (Some researchers have shown low blood levels in birds given doxycycline in combination with food, however clinical impressions indicate good results.)

This mix is clinically effective, well accepted, and birds have normal droppings:

Mix

2 quarts whole dry corn, boiled or canned whole corn.
5-100 mg capsules doxycycline
1/16 tsp. Gentian Violet Powder (fungal preventative)

Add

2 quarts regular parrot mix, mix well, prepare fresh daily.

3. Cockatiels, budgerigars, finches and other small birds may be easily treated with CTC impregnated millet seed (Keet Life by Hartz Mountain) which may be mixed with medicated pellets. Birds should be treated for 30 to 45 days.
4. Medicated diets may be added to the normal ration for approximately three days, after which only medicated feed should be offered.
5. Supplemental calcium should be avoided. Calcium can be given by injection if needed. Vitamins can be supplied in the water, or feed if needed.
6. Oral doxycycline can be administered initially in very ill birds, or birds which refuse medicated feeds. The syrup may be given on fruits for individual birds which can be observed for consumption. BID oral administration for prolonged periods of time is stressful for bird and owner unless the bird is tame and readily accepts it.
7. Intravenous doxycycline is useful for stabilizing critically ill birds. May be fatal if administered intramuscularly.
8. Birds should be monitored for bacterial or fungal overgrowth, especially if using CTC. Gentian Violet powder is an inexpensive and effective fungal preventative.

VII. SALMONELLOSIS

A. Prevention

1. Prevention is difficult as carrier state often occurs in birds which survive an initial outbreak. Carriers may shed salmonella sporadically so negative fecal culture is not evidence of freedom of infection.
2. Exclusion of mammals, reptiles and chickens from direct contact with the birds or their feed.
3. Vaccination may be helpful in problem flocks. Salmonella-typhimurium dublin vaccine made for cattle is safe for birds and appears to be efficacious in problem flocks. (Colorado Serum Company, Denver, CO.)

B. Action in an outbreak

1. Chloramphenicol is the drug of choice and can be administered in the feed. If cooked corn coated with chloramphenicol is added to the feed. Feed intake is estimated and dosage is calculated at 100 mg./lb. of bird per day.
2. Cleanup should include removal or acidification of soil if flights have soil floors. Salmonella is resistant in the environment and can survive in soil for an extended period of time.
3. Look for the source - feed, rodents, etc.

VIII. CANDIDIASIS

A. Prevention

1. Monitor food sources for contamination. Soft foods are most important.
2. Avoid indiscriminate use of antibiotics which may lead to fungal overgrowth.
3. Provide adequate dietary levels of Vitamin A.
4. Pretreat for candida before treatment for chlamydiosis if annual treatment is necessary. In cockatiels, treatment of the flock prior to breeding may be helpful in reducing chick mortality.

B. Action in an outbreak and treatment

1. Discover source if dietary and eliminate
2. Supplement Vitamin A
3. Nystatin oral suspension for individuals: 1cc/300gms
SID or BID.
4. Myco 20 (Nystatin feed premix: 1-2 tbsp/5lb. of feed
with corn or other suitable moist food for a vehicle.
Should not be used with CTC due to calcium content.
Has been reported to be potentially contaminated with
bacteria.
5. Genetian Violet feed premix: $\frac{1}{2}$ tsp. per 5 gallons feed
6. Ketoconazole, Flucytosine or Amphotericin B for re-
fractory cases.