Antibiotics for avian patients

MJ Cannon
Cannon-Ball Veterinary Clinic
461 Crown Street
Wollongong 2500

This paper is not a complete treatise on antibiotics used in avian practice Australia. It is a summary of the antibiotics I use most commonly in my practice with the various dosages I have gleaned from the literature over the years.

All the bacteria that cause disease have variable antibiotic sensitivities, so Gram stain and culture and sensitivity are recommended. While the results are pending I use the following antibiotics:

GRAM NEGATIVE BACTERIA

Piperacillin 100-200 mg/kg bodyweight q 12 hours, IM injection. Reconstituted drug has short half life. Once reconstituted store frozen in 1ml syringes.

OR

Enrofloxacin 15 mg/kg q 12 hours IM injection
30 mg/kg q 12 hours orally
200 ppm in drinking water
Use with care in young growing birds as behavioural changes and articular cartilage defects have been reported in puppies. It is not known if this occurs in birds

OR

Amikacin 20mg/kg q 12 hours IM injection (250 mg/ml diluted to 25mg/ml with sterile water).

OR

Cephalosporins:

Cefotaxime 100mg/kg q 8-12 hours by IM or IV injection.

OR

Cephalexin 35-50 mg/kg q 6 hours oral drops.

Salmonella typhimurium

Trimethoprim 40mg/Sulphamethoxazole 200mg/5ml oral suspension

6-9 ml/kg q 12 hours

OR

Trimethoprim 80g/Sulphadiazine 400g/L

Use 3ml/4.5L drinking water for 5 days. Variations in water intake may influence dose of drug received. Aim for 45-90 mg active ingredient per kg total liveweight q 24 hours.

OR

Furaltadone

1g/L water for 14 days

OR

Lincospectin

0.75g powder/L for 5 days
50mg/kg IM injection q 24 hours for 5 days

Escherichia coli

Outbreaks are associated with poor level of hygiene and onset of stress from any cause. There is a wide variance in pathogenicity of different strains of *E. coli*. Treatment is commenced if clinical signs are present or if large numbers of bacteria are present on Gram stain.

Amoxycillin

100-150 mg/kg bodyweight q 6 hours orally or q 12 hours IM injection
750 mg/5L drinking water for Parrots (contents of 1 Amoxil Aqueous drops Bottle)
400 mg/L in drinking water for finches

OR

Amoxycillin/Clavulinic acid

125-150 mg/kg bodyweight q 12 hours orally or IM injection
937.5 g/5L drinking water (Contents of 1 Drops bottle) Manufacturer claims that 1 drop from the dropper provided contains 2.5mg Clavulox when diluted as recommended.

OR

Trimethoprim 40mg/Sulphamethoxazole 200mg/5ml oral suspension

2-3 ml/kg q 12 hours orally

OR

Trimethoprim 80g/Sulphadiazine 400g/L.

Use 1ml/4.5 L drinking water for 5 days. Variations in water intake may influence dose of drug received. Aim for 15-30 mg active ingredient per kg total liveweight q 24 hours.

OR

Furaltadone 1g/l water for 14 days

OR

Lincospectin 0.75g/L for 5 days
50mg/kg IM injection q 24 hours for 5 days

Yersinia pseudotuberculosis

This is seen in canaries, finches, pigeons, Australian parrots such as neophemas, *Polytelis*). Presents as a septicaemia and pneumonia. Associated with vermin such as rodents and wild birds. Occurs in cold weather - winter particularly.

Amoxycillin

100-150 mg/kg bodyweight q 6 hours orally or q 12 hours IM injection
750 mg/5L drinking water for Parrots (contents of 1 Amoxil Aqueous drops Bottle)
400 mg/L in drinking water for finches

OR

Amoxycillin/Clavulinic Acid

125-150 mg/kg bodyweight q 12 hours orally or IM injection
937.5 g/5L drinking water (Contents of 1 Clavulox Drops bottle)
Manufacturer claims that 1 drop from the dropper provided contains 2.5mg Clavulox when diluted as recommended.

OR

Trimethoprim 40mg/Sulphamethoxazole 200mg/5ml oral suspension

2-3 ml/kg q 12 hours

OR

Trimethoprim 80g/Sulphadiazine 400g/L.

Use 1ml/4.5 L drinking water for 5 days. Variations in water intake may influence dose of drug received. Aim for 15-30 mg active ingredient per kg total liveweight q 24 hours.

Pasteurella spp

The most common situation to suspect *Pasteurella* is following trauma from a cat bite.

Cefotaxime 100mg/kg q 8-12 hours by IM or IV injection.

OR

Cephalexin 35-50 mg/kg q 6 hours oral drops.

OR

Amoxycillin

100-150 mg/kg bodyweight q 6 hours orally or q 12 hours IM injection
750 mg/5L drinking water for Parrots (contents of 1 Amoxil Aqueous drops Bottle)
400 mg/L in drinking water for finches

OR

Amoxycillin/Clavulinic Acid

125-150 mg/kg bodyweight q 12 hours orally or IM injection
937.5 g/5L drinking water (Contents of 1 Clavulox Drops bottle
Manufacturer claims that 1 drop from the dropper provided contains 2.5mg Clavulox when diluted as recommended.

OR

Trimethoprim 40mg/Sulphamethoxazole 200mg/5ml oral suspension

2-3 ml/kg q 12 hours

OR

Trimethoprim 80g/Sulphadiazine 400g/L.

Use 1ml/4.5 L drinking water for 5 days. Variations in water intake may influence dose of drug received. Aim for 15-30 mg active ingredient per kg total liveweight q 24 hours.

GRAM POSITIVE BACTERIA

***Clostridium* spp**

This is relatively common in Australian lorikeets, particularly rainbow lorikeets (*Trichoglossus haemotodus*), Scaley-breasted lorikeets (*Trichoglossus chlorolepidotus*) and varied lorikeets (*Psitteuteles versicolor*). The most common sign is sudden death. Diarrhoea can be difficult to detect in lorikeets because they normally have very watery faeces, but in affected birds there will be faecal soiling of the vent area. Affected birds will usually be thin, weak and depressed. Diagnosis is by signs of necrotic enteritis at post mortem examination and gram stain and culture.

Amoxycillin

100-150 mg/kg bodyweight q 6 hours orally or q 12 hours IM injection for individuals
400 mg/L of nectar Formula for flock treatment

OR

Amoxycillin/Clavulinic Acid

125-150 mg/kg bodyweight q 12 hours orally or IM 937.5g/5L of nectar. Use Clavulox drops or crush and add Clavulox tablets.

OR

0.75g Powder/L nectar formula for 7 days

OR

Lincomycin/Spectinomycin

1.0ml/kg q24 hours IM injection for 5 days.

Streptococcus spp.

This is the major bowel inhabitant. Outbreaks of disease are usually associated with severe stress. Most avian strains are sensitive to Amoxycillin

Staphylococcus spp.

Amoxycillin

100-150 mg/kg bodyweight q 6 hours orally or q 12 hours IM injection
750 mg/5L drinking water for Parrots (contents of 1 Amoxil Aqueous drops Bottle)
400 mg/L in drinking water for finches

OR

Amoxycillin/Clavulinic Acid

125-150 mg/kg bodyweight q 12 hours orally or IM injection
937.5 g/5L drinking water (Contents of 1 Clavulox Drops bottle
Manufacturer claims that 1 drop from the dropper provided contains 2.5mg Clavulox when diluted as recommended.

OR

Lincomycin/Spectinomycin

0.75g Powder/L nectar formula for 7 days

OR

Lincomycin/Spectinomycin

1.0ml/kg q24 hours IM injection for 5 days.

Mycobacterium spp.

This disease is not commonly diagnosed in Australian. Because of the zoonotic potential euthanasia is often the recommendation. This disease would be a high risk to an immunosuppressed person. Avian tuberculosis is a common complication of AIDS patients.

Treatment may be given for a pet bird where the client was unwilling to consider euthanasia. The course of treatment is prolonged:

10-20 mg/kg q 12 hours IM injection for 7 days

AND

Rifampicin

10-20 mg/kg q 12 hours orally for up to 12 months

AND

Ethambutol

15 mg/kg q 12 hours orally for up to 12 months

OTHER BACTERIA

Chlamydia

The most common cause of air sacculitis and septicaemia in Australian parrots and pigeons. Occasionally seen in budgerigars (*Melopsittacus undulatus*), and finches. Generally not as acute an onset as with bacterial septicaemia. Associated with times of stress in an aviary. Very common in *Neophema* (Bourke, scarlet-chested, turquoisine, elegant, blue-wing etc.) and *Polytelis* (princess, superb, regent) parrot species. Outbreaks begin in late summer, peak in autumn and remain high throughout winter

Chlortetracycline (CTC)

Parrots	500mg/L water for 30 days quarantine period
Lorikeets	Use nectar formula with 0.05% CTC for 45 days
Flock	150mg/L water for 45 days
Individual	10mg/60ml Mash - force feed 20ml/100g bodyweight q 8 hours

In all cases the CTC must be made freshly each day. Provide this medicated water/nectar only in glass, glazed or plastic containers, not metal or earthenware containers. Remove all sources of calcium (e.g. shellgrit, cuttlebone) as it strongly chelates with CTC. CTC can affect fertility for 4-6 weeks.

OR

Doxycycline

25-50 mg/kg q24 hours orally for 45 days
10 g/L in water medication for 45 days
75-100 mg/kg q 7 days IM injection x 6-8 injections
N.B. only safe form for intramuscular injection is "Vibravenos 200mg/ml" all other injections must be given intravenously.

To control zoonotic potential infected premises should be disinfected carefully:

* Iodophors and 1% quaternary ammonium compounds for cages
* 1% lysol, 3% Formalin or 1% quaternary ammonium compounds for most surfaces
* Phenolics for faeces and wastes

Mycoplasma spp.

Because of the difficulty in culturing mycoplasma, it is accepted practice to assume they will be susceptible to tetracyclines, lincomycin/spectinomycin, tylosin and enrofloxacin

Tetracyclines

Doxycycline

25-50 mg/kg q24 hours orally for 45 days
10 g/L in water medication for 45 days
75-100 mg/kg q 7 days IM injection x 6-8 injections
N.B. only safe form for intramuscular injection is "Vibravenos 200mg/ml" all other injections must be given intravenously.

OR

Chlortetracycline (CTC)

Parrots	500mg/L water for 30 days quarantine period
Lorikeets	Use nectar formula with 0.05% CTC for 45 days
Finch Flock	130mg/L water for prophylaxis 260mg/L for treatment for 45 days.
Individual	10mg/60ml Mash - force feed 20ml/100g bodyweight q 8 hours

CTC affects fertility for about 4-6 weeks. In all cases the CTC must be made freshly each day. Provide this medicated water/nectar only in glass, glazed or plastic containers, not metal or earthenware containers. Remove all sources of Calcium (e.g. shellgrit, cuttlebone) as it chelates with CTC.

OR

Tylosin

10mg/kg q 12 hours IM injection for 5 days.
0.5-1.0 g/L drinking water for 5-7 days.

Not easily dissolved in water. Add a small amount of water to powder and dissolve well before making up the final volume.

OR

Tiamulin

Useful in flock treatment of pigeons.
3g Powder per 12 litres drinking water for 5-7 days
2ml solution/L drinking water for 5-7 days

OR

Enrofloxacin

15 mg/kg q 12 hours IM injection
30 mg/kg q 12 hours orally
200 ppm in drinking water

Use with care in young growing birds as behavioural cahnges and articular

cartilage defects have been reported in puppies. It is not known if this occurs in birds.

CANDIDA SPP

Nystatin

300,000 iu/kg q 8-12 hours orally

OR

Ketoconazole

25 mg/kg q 12 hours orally
(Parrots-dissolve 200mg tablet in 0.8ml 1N HCl+ 3.2ml water) use 0.1-0.2ml/kg q 12 hours for 2 weeks. Can be mixed in hand rearing formula.
(Finches-dissolve 200mg tablet in 1200ml drinking water. Use for 8-14 days.)

OR

Fluconazole

2mg/kg q 24 hours orally. Transient vomiting may occur.

OR

Chlorhexidine 5% solution

may be added to the drinking water. Use 1ml per litre water for 5-10 days

PROTOZOAN PARASITES

Trichomonas

A common problem in budgerigars, raptors, pigeons (*Columbiformes*), finches, cockatiels (*Nymphicus hollandicus*) and some Galliformes.

Metronidazole 10 mg/kg q 24 hours orally for 7 days

OR

Dimetridazole

* Flock 3g powder/5L drinking water for 5 days.

Solution is stable for 3 days at room temperature. Beware of rconsumption (hot days, feeding young) as there is a narrow safety margin.

* Individual Make up 0.3% solution (3g powder/L). Use 0.5ml/50g body weight for 5 days.

OR

Dimetridazole/Metronidazole combination

Use 3g dimetridazole and 10ml metronidazole (5g/L) in 5 Litres drinking water for 5 days. For resistant cases unresponsive to Dimetridazole alone.

OR

Ronidazole 60mg/g

Use 1g/L drinking water for 7 days

OR

Carnidazole

1 tablet to adult pigeons, 0.5 tablet to juvenile pigeons. Remove all food and water overnight. Dose following morning. No water to be provided for the next 2-3 hours. Disinfect all food and water dishes before water is provided.

COCCIDIA

Particularly in psserine bird and pigeons. Signs range from chronic weight loss to acute illness and bloody diarrhoea. Diagnosis by faecal examination. The presence of oocysts is not necessarily pathological. Interpret their presence with clinical signs present. Coccidia oocysts

commonly increase in number when the bird has any other illness. Always look for other pathogens or diseases as coccidiosis is often a secondary problem.

Baycox

1ml per litre drinking water for 3 days

OR

Amprolium 80g/Ethopabate 5.1g/L

Use 3ml/L drinking water for 7days followed by
2ml/L drinking water for 7days followed by
1ml/L drinking water for 7days followed by
1ml/L drinking water for 1 week each month.

OR

Trimethoprim 80g Sulphadiazine 400g/L.

Use 1ml/4.5 L drinking water for 5 days.
Variations in water intake may influence dose of drug received. Aim for 15-30 mg active ingredient per kg total liveweight q 24 hours.

ATOXOPLASMA

A problem in canaries or in Gouldian Finches (*Erythrura gouldiae*) foster-raised under Bengalese finches (*Lonchura domestica, L. striata*). Despite many drugs being trialled none has been found to cure this problem. In Holland, sulphachlor-pyrazin (0.5g/L drinking water for 5 days a week, continued until after moulting) has been shown to reduce shedding of oocysts but does not affect the intracellular stages.

FUNGI

Aspergillus spp

A problem in large bird collections particularly in softbills. Caused by *Aspergillus fumigatus*. Most patients will die. Some success has been reported with using Amphotericin B intratracheally and by nebulisation. This may be combined with 5-Flucytosine and Ketoconazole.

Amphotericin B 1.5 mg/kg q 24 hours IV or SC injection.
Potentially nephrotoxic.
1.0 mg/kg intratracheally. Dilute 50:50 with sterile water to increase volume for maximum distribution.
To nebulise take 0.5ml of 5 mg/ml solution, make up to 3 ml with sterile water. Place bird in small cage covered with thick cloths or plastic and nebulise for 20 minutes q 12 hours.

AND

Ketoconazole 25 mg/kg q 12 hours orally

AND

5-Flucytosine 100 mg/kg q 8 hours orally

Cryptococcus neoformans

This is an important problem because of its zoonotic potential. Although it is uncommon, it may occur sporadically in larger parrots such as African grey Parrots (*Psittacus erithracus erithracus*) and Eclectus parrots. Lesions occur around the face, beak nares and inside the mouth. Some success has been reported with Fluconazole. Surgical reduction and removal of as much of the masses as possible is recommended.

Fluconazole Available as a syrup (5mg/ml) 8 mg/kg q 12 hours until signs abate. Transient vomiting may occur.

DERMATOPHYTES

This can be a difficult problem to treat. Usually they occur on the thinner skinned areas of the body such as the upper beak and around the head. Clinical signs include crusts, scabs and alopecia. There may be marked epidermal hypertrophy around the feather follicles. Species of fungi identified as causing these signs are:

Microsporum gallinae (pigeon, turkey, quail, duck, chicken, canary)
Microsporum gypseum (parrots, chicken)
Trichophyton verrucosum (canary, chicken)
Trichophyton spp. (softbills)

Miconazole	Apply cream topically q 12 hours for 7 days Use cream sparingly as it will damage the feathers
	OR
Griseofulvin	125 mg/kg q 24 hours orally for 3-5 days
	OR
Amphotericin-B	1 mg/kg q 24 hours orally for 3-5 days.
	AND
Chloramine	6 g/L to disinfect surfaces and premises.