

ALWAYS assume that an adult coming into care is in shock.

Captivity is stressful. Stress and stress-related diseases are the most common causes of failure when rehabilitating wildlife!

Stress may trigger disease or cause clinical symptoms. Animals under rehabilitation stress can catch pathogens – ongoing observation is necessary

There is little knowledge about pathogens carried by wildlife and sometimes reliable tests are missing. We don't know what organisms or pathogens ringtails may naturally harbour without falling ill.



Haematology and biochemistry values for possums are limited and there is no reference range for ringtail urine available. It's usually moderately turbid.

It is important to screen all incoming animals for infectious disease. If in doubt, see a vet.

Good record keeping can help establish normal physiological parameters and identify infectious agents for ringtails.

Follow the basic principles of preventative medicine and if you are in doubt whether an animal is free of infectious disease, keep it quarantined.

### Housing

Minimum Standards:

- (1) 30 x 43 x 36 cm = Carry cage size
- (2) 90 x 90 x 90 cm
- (3) 0.9 x 1.8 x 1.8 m

Only house 2 animals together if they are mum and offspring (still small) or (if bigger) mum and a daughter.

- (1) Intensive care – always indoors  
Required for animals that need close monitoring (acute state), restricted mobility (avoid re-injuring), healing of fractures, constant medical treatment (easy, quick and stress-free capture)  
Quiet, warm, as stress-free as possible environment in a well covered cage
- (2) Recovery and strength building phase  
The animal should still be easily accessible if necessary but it needs enough space for a normal behaviour
- (3) Pre-release phase  
Aiming at conditioning for a free life with opportunities to improve strength and stamina. The animal needs to be weaned off human contact

Requirements for outdoor cages:

- secure from escaping
- no unnecessary risk of injuries
- protection from inclement weather (rain, storm)
- protection from excessive heat and cold
- protection from wild possums
- no contact with pets
- providing secure rest places (drey, box)
- providing ample climbing opportunities
- providing a 'natural' environment
- easy to clean

## Hygiene requirements

Wash water dish and food dishes daily.  
Remove food and spillages so that animal doesn't eat contaminated foods.

In an outside enclosure minimise attraction to rodents.

Try to eliminate biting insects that may spread disease or blood parasites, however don't let ringtails get in contact with pesticides, fly sprays etc.

Keep the cage dry - damp, wet or dark areas harbour pathogens.

Rake enclosures to remove faeces.

Cages should be cleaned daily with hot water and detergent of food and faeces and disinfected at least at the end of their use by this animal.

However, no over-zealous cleaning activity should stress out the patient.

After one possum has moved out:

- Preferably keep cages empty for a while (in sunlight).
- Possums have scent and para-cloacal glands that are important for communication (e.g. marking their territory). Marked furniture should at least be cleaned but if possible renewed for each new ringtail.

Hospital-grade disinfectant can often be bought from the vets.

If there should be a contagious disease outbreak, more rigorous practices are required.

## Feeding

All ringtails need a natural diet, consisting of a wide variety of native flora. They are primarily folivorous but also eat flowers and (if offered) fruit. Any diet in captivity should be as close to that of free-living animals as possible.

Captive animals don't have much opportunity to vary their diet, however if fruit is included for that reason, limit the amount (maximum of 50 grams per day and animal), wean them before release.

Feeding fruit and a high sugar diet can lead to bloating which can be fatal.

Feeding a diet based on natural foods can also prevent periodontal disease.

Severe tooth wear in old animals can lead to emaciation. Then soft fruit will be favoured – unless the sugar hurts their teeth.

Obesity is not uncommon if there is an unlimited food supply and little opportunity for exercise.

Always offer fresh water in a clean bowl.

A variety of native leaves (always including a big supply of peppermint) should be provided in water containers to avoid drying of leaves. Leaves are poor sources of nutrition – ringtails consume at least 15% of their body weight daily.

If supplement food (or vitamins etc) were used, wean the animal slowly and early enough off them.

Weight should be monitored during the recovery and/or rehabilitation. A pre-release weight should be recorded.

## Health problems / medication

Adults often come into care in the terminal stages, when disease or effects of trauma are overwhelming and the animal cannot cope any longer.

Immunosuppression can follow recent capture, stress of any kind, cold conditions, excessive heat etc. However, capture myopathy (as common in kangaroos) seems uncommon in ringtails.

Possums are very stoic and try to hide pain. Signs for pain include: aggression, apathy, hypothermia, hyperthermia, hunching, hiding, lack of grooming, over-grooming, lack of appetite and rapid weight loss leading to anorexia.

## Pain/pain relief

Assessment of pain:

If anything would hurt us, it'll hurt other mammals too. Every animal that has a spinal cord and nerves will feel pain.

Pain can have adverse effects on the healing of wounds (stress hormones). Pain increases the metabolic rate and therefore the energy requirements but also the intestinal immobility (gas build-up, unwillingness to eat). Apathy and loss of appetite resulting in a breakdown of muscle tissue for energy, dehydration, reduced renal function, inflammation and tissue damage compound the situation. Always handle animals in pain gently and quietly with calm movements and low voices.

Pain relief can shorten recovery times considerably. However:

Pain relief has to be prescribed by a vet.

There are hardly any drugs licensed for use in ringtails. Most drugs and dosage regimes have been extrapolated from those used in domestic species. Ringtails may react differently to e.g. cats and may show different side effects.

**Metacam** (Non-steroidal anti-inflammatory drug, most commonly used pain relief):

Herbivorous animals such as ringtails don't have the same thick stomach lining as carnivores – they are more susceptible to ulcers.

Dehydrated animals or those in shock are more susceptible to kidney damage.

Pain medication should be given for a minimum of time – but as long as required. Accurate dosing in small animals needs dilution. 1 drop of Metacam is enough for a 1 kg ringtail – for smaller animals dilute Metacam 1:10 with boiled cooled water, then use amount according to weight. 0.2 mg/kg once daily (Melbourne Zoo)

Human medication such as Aspirin or Panadol should not be used in wildlife.

Risks include overdosing, liver failure, preventing blood from clotting.

## Antibiotics

Pouch babies and sub-adults seem particularly sensitive to antibiotics and disturbance of their gut flora.

The duration of the therapy should be kept to a minimum. Use Probiotics (e.g. Protexin) after-

wards at least for the same length of time as the treatment. Nystatin may also be prescribed by your vet to prevent secondary fungal or yeast overgrowth during antibiotic therapy.

Abscess from cat bites are frequently caused by a variety of bacteria including anaerobic bacteria – Clavulox is the first choice of treatment but NOT for folivorous caecal fermenters such as ringtails (risk of caecal stasis). However Baytril (Enrofloxacin) does not treat anaerobes.

#### **Injections versus oral medication:**

Subcutaneous injections are the slowest way of administering a substance to a body – slower than oral doses. However, the level of hydration (or dehydration), the temperature of the animal, possible disease of the digestive tract, presence of food – all influence the time a substance takes to work. Absorption from the gut will be very limited in shocked or depressed animals – better inject. However, oral administration can be far less stressful for an animal (and a carer) – e.g. given on a bit of fruit.

The sooner an animal is treated the better the chances – reduced risk of osteomyelitis (infection establishing itself in the bone). Giving incomplete courses of antibiotics can allow the condition to flair up again, but giving antibiotics for too long can severely affect the digestive

system of ringtails or cause other side effects. 5 days are recommended as an average for a more superficial infection.

#### **Health threats**

**Toxoplasmosis** is reported as frequent in ringtails but infection in free animals is often subclinical. Cysts can remain dormant without causing disease, but can reactivate when the host is immunocompromised – effective cat control is the best prevention. Cats should NEVER get close to ringtails or their food.

Toxoplasmosis is extremely hard to diagnose without expensive tests because the range of possible signs is huge and diverse – ataxia (bad muscular coordination), hind leg weakness or paralysis, convulsions, diarrhoea, cataract formation....

There is no known treatment for ringtails. (Long-term treatment with Clindamycin is not tolerated by ringtails).

Most instances of **intoxication** are related to substances used in gardens, houses (snail baits, rat poison, insect spray etc) or enclosures. Urban animals are particularly vulnerable.

Some plants can be toxic – azalea, daffodil bulbs, oleander, rhododendrons.

Zinc toxicosis can result from contact with the wires of a new aviary. Paint, varnish, treated timber for cages are all known to be potentially toxic to ringtails.