Introduction to the Care and Handraising of Macropods

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RESCUE OF A JOEY

When travelling on country roads you will discover there are many species which have met with an unpleasant fate, lying either dead or injured, on or near the side off roads and highway’s. Many females with pouched young are left on the shoulders of the roads with young defenceless joeys left there to starve or become prey to feral animals and birds of prey. A joey can survive in its mothers pouch for days, Some may be found thrown from the pouch or hiding in nearby grass or shrubs. Always check the pouch for signs of Lactation. A long teat signifies a joey has been suckling. This means there is a joey at foot which will be stressed and hiding nearby. Listen carefully you may be able to hear the distress call from an orphaned joey.

Always remove a dead animal from the road to prevent vehicle accidents and death to birds of prey which will feed from the carrion. When travelling always carry an emergency rescue kit with you, consisting of disposable gloves used for removing dead animals from the road and checking the pouches of animals, vytrate or Albicalb for rehydration purposes, a sterile bottle, suitable joey teat with a small hole, hot water bottle, cotton pillow cases, warm outer pouches, made from sloppy joes or woollen jumpers, thermometer (preferably a digital probe thermometer).

ASSESSMENT OF A JOEY

When removing from the pouch always check for any obvious signs of injuries, for example broken limbs (if the joey has compound fractures of the hind legs, it is kinder to euthanase the animal immediately). Cuts and abrasions, bleeding from the nose and mouth, check the joeys body temperature by feeling its feet, if these are cold the joeys body temperature will be low. There is a possibility the joey may contact pneumonia and will need a course of antibiotics. Make note of this and hand on all relevant information to veterinarians or your co-ordinator.

Immediate Care

Heating

Place the joey into a cotton inner pouch and place in a woollen outer pouch or sloppy joe (appropriate to the temperature), always leaving the top of the pouch open a little to create an air way for the joey to prevent overheating and to assist the joey to regulate its own heat. It is ideal to use a probe thermometer to place beside the joey, inside the pouch so as to monitor the joeys temperature, please note these thermometers should not be placed under or touching the joey or you will get an inaccurate reading. Always remember to regulate the joeys temperature before you attempt to feed it, NEVER FEED A COLD JOEY.

The ideal temperature for an unfurred joey with eyes closed and ears down is a constant 34 - 35 degrees, once the eyes are open the temperature should be dropped back to 32 - 34 degrees, fully furred joeys at 28 degrees.

To maintain your joeys temperature you may use hot water bottles, being aware that these are not consistent and may reach up to 40 deg. then drop, down to a low temperature in a space of 5 or 6 hours. Always make sure water bottles are wrapped in a towel or blanket, never lay your joey directly on a hot water bottle or you will overheat your joey.
Heat pads are available from your equipment officer or most veterinarians. Animal water beds are ideal for constant heat control, as these are all thermostatically controlled. Baskets or hanging pouches may be placed near a heat source such as slow combustion heater, keep a close watch on your joeys temperature so as not to overheat.

Dehydration
Many joeys when they first come into care are suffering from dehydration, check for this prior to attempting to feed. To check for dehydration pinch up the skin from the back of your joey's neck, between your finger and thumb, if this skin springs back into place the joey is not dehydrated. If the skin is slow to return back into place, then your joey is suffering from dehydration. Your joey will need to be rehydrated, this is done by injecting your joey with subcutaneous fluid i.e. hartmans solution or 5% glucose. At a rate of 10% of body weight, initially, then adjust accordingly, depending on the fluid taken orally. Subcutaneous fluids should always be given at blood temperature.

COMMITMENT
Are you prepared to surrender your free time and many hours of sleep to spend sitting with a sick joey. You will need an endless supply of patience and will need to be prepared for a lot of heartbreak. Some joeys, depending on their size, will require feeding every four hours both day and night. But along with the heartbreak there is also satisfaction and many months of sheer joy as you reach your ultimate goal, the final release of that precious native animal. Does your family understand and accept that you will have to dedicate many hours and miss out on some family activities because a joey's feed coincides with their arrangements.

You must also consider the extra workload and the expense involved in raising a joey, as most joeys are in your care for a minimum of twelve months.

If you and your family are prepared for all this then you will enjoy raising your joey with their support.
EQUIPMENT

Items you will need to commence caring for your macropod are easily obtainable and mostly inexpensive to begin with, it is advisable to get your basic items that you will require as joeys do not keep business hours and can arrive at all hours of day or night, so be prepared with:

- 100ml Bottle
- Macropod Teats
- Electrolyte Replacer
- Thermometer (a cheap one available from supermarkets, baby Bath thermometer)
- Hot Water bottle
- Milton Sterilising Solution
- Pillow cases (cotton or flannelette)
- Sloppy Joes (with both arm and neck holes stitched up)
- Basket or Hanging Pouch
- Blanket (for lining basket and covering hot water bottle)
- Bottle Brush

Things you may wish to purchase if you continue to raise Macropods:

- Extra of all of the above.
- Digital Scales
- Digital Probe Thermometers
- Hanging Scales (fisherman scales)
- Water Beds (Animal)
- Tape measure
**Pouches**

Be sure that your pouches are made from natural fibre eg. cotton or wool. Wallabies in particular will suck their pouches and chew carpets and can ingest fibres, which can cause stomach blockages. If synthetic fibres are ingested, this can lead to surgery, the prognosis is very poor. Pouches should be checked regularly for loose threads, so as to prevent threads winding around limbs and cutting off circulation. Overlocking or french seams are advisable for use on all pouches.

**Hygiene**

Strict hygiene is essential in the handraising of macropods, all feeding equipment eg. bottles, teats etc must be kept clean and sterilised. Each joey must have its own teat. Milton anti bacterial solution is the ideal sterilising solution for your equipment, the cheaper brands of steriliser tend to deteriorate teats very quickly. When preparing formulas and bottles hands must be clean as well as all preparation areas.

After feeding your joey wipe the joeys mouth, to remove any traces of milk, as milk left around the mouth will attract flies, and can cause thrush.

Clean all bottles and teats with a bottle brush and rinse thoroughly before placing in steriliser, alternately half fill the bottle with water and add a teaspoon of uncooked rice and shake vigorously, then rinse and place in solution. Rub teats with household salt to prevent any milk buildup.

Inner pouches must be changed daily, if a joey soils or wets its pouch they must be changed immediately. Remove any faeces from pouches, then rinse and place in a bucket with disinfectant or nappy treatment, until ready to wash.

Bleach is not suitable for use on joey pouches as this is very harsh and will remove the skin from your joey. On furless joey pouches we recommend the use of Lux flakes, other washing powders can cause skin irritation, leading to cracked and bleeding skin.

All outside areas must be raked or swept daily to remove faeces, all spilt or soiled food must be removed to aid in the prevention of disease. Indoor areas where macropods are kept should be cleaned with disinfectant daily.
FEEDING YOUR JOEY

All fluids should be at blood temperature, check all bottles before attempting to feed your joey, if the bottle is too hot it will burn the mouth. Always prepare formulas with pre boiled cooled water, as boiling water will destroy the vitamin and mineral content of the formula.

Some joeys are very slow when first introduced to the bottle, so find a comfortable seat, as you may find yourself seated for a while. Don’t rush your joey with its bottle, relax and make this an enjoyable time for both you and your joey, otherwise you may end up with a stressed joey and this should be avoided.

It is important that your joey feels secure before you make any attempt to feed it, leave your joey in its pouch and place it on your lap, close to your body, gently place your hand over your joey’s eyes, and around its muzzle, opening its mouth with your thumb and finger to insert the bottle. Keep your hand over your joey’s eyes until he settles and drinks freely. Never squeeze the bottle as this will cause the joey to inhale milk into its lungs causing inhalation pneumonia. If milk comes out your joey’s nose, it could contract pneumonia and a course of antibiotics will prevent this, with all future feeds check the hole size in your teat, as it may be too large. If the problem persists after replacing with a new teat, that has a smaller hole, the joey must be taught to lap. Red Kangaroos and Wallabies will lap more readily than Eastern Greys.

Teats tend to wear quickly, check regularly as teats stretch and split from continual use of sterilising solutions. Always keep spare teats and replace at first sign of wear.

Refer to feed charts for formulas and quantities required.
Formulas

There are only three suitable formulas for macropod joeys, as macropods must have a low lactose diet, they are unable to digest lactose. DiVetalact, Biolac, Wombaroo, are all proven successful formulas used in the hand raising of orphaned macropods. The formula you use must be of your own choice, all products are readily available. Wombaroo and Biolac manufacturers instructions must be strictly adhered to.

Manufacturers recommendations for use of Divetalact are one scoop per 70mls, but I have had much better results with one scoop per 50mls However some joeys cannot tolerate the stronger milk and will have to be put back to the weaker strength.

When a joey first comes into care they must be introduced to Divetalact gradually. For the first 24 hours offer your joey as much vytrate as he is prepared to drink.

<table>
<thead>
<tr>
<th>DAY 2</th>
<th>¼ VYTRATE + ¼ DIVETALACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY 3</td>
<td>½ VYTRATE + ½ DIVETALACT</td>
</tr>
<tr>
<td>DAY 4</td>
<td>¼ VYTRATE + ¾ DIVETALACT</td>
</tr>
<tr>
<td>DAY 5</td>
<td>FULL STRENGTH DIVETALACT</td>
</tr>
</tbody>
</table>

E.G. This is an example of formula required to feed a 2.0kg joey per feed.

- Day 2 75mls Vytrate + 25mls Divetalact
- Day 3 50mls Vytrate + 50mls Divetalact
- Day 4 25mls Vytrate + 75mls Divetalact
- Day 5 Full strength Divetalact

When using Divetalact your joey will need 10% to survive and 15% to 20% to thrive.

Provided the joey is not dehydrated and you wish to use Wombaroo or Biolac you can commence formula as per manufacturers instructions.

To help aid depleted gut flora in joeys it is of benefit to add 1 tablespoon of natural yoghurt to 1 litre of Divetalact, if scouring occurs, discontinue the added yoghurt, but do not decrease the strength of the formula.

NEVER RE-HEAT MILK, ALWAYS STORE MILK IN REFRIGERATOR,
WASH BOTTLES AND TEATS IMMEDIATELY AFTER USE.
ALWAYS WIPE ALL SPILT MILK FROM JOEYS MOUTH.
Quantity Feeding Guide
Every joey seems to need varying amounts of formula, this is why weighing your joey weekly is essential to monitor its progress. A steady weight gain is essential, you should weigh your joey at approximately the same time and day each week.

Do not exceed the maximum amount of formula recommended for your joeys weight. Up to a maximum of 4 x 120ml bottles per day. An ideal weight gain would be an average minimum of 100gms per week, if under average weight gain persists, the joey should be checked. You may find that a joey will have a weight loss in its first few days in care.

It is recommended that first time foster carers commence hand raising joeys from a minimum weight of 2.0kg.


For a
- 900gms - 1.5kg                  5 feeds per day
- 1.5kg - 4.5kg                   4 feeds per day
- 4.5kg - 7.0kg                   3 feeds per day
- 7.0kg - 9.0kg                   2 feeds per day
- 9.0kg - 10kg                    1 feed per day then wean.

Guide to feeding Wallabies

For a
- 800gm.- 1.0kg                  5 feeds per day
- 1.0kg - 2.0kg                   4 feeds per day
- 2.0kg-.3.0kg                   3 feeds per day
- 3.0kg - 4.0 kg                  2 feeds per day
- 4.0kg - 6.0 kg                  1 feed per day then wean.

e.g. A 1.4kg joey requires a minimum of 140ml per day and a maximum of 280 ml per day, divided equally between 5 feeds per day.

Red kangaroos may be weaned at 9.0kg. Wallaroo’s may be weaned at 8.0kg.
Consult your coordinator with any problems or questions you may have regarding feeding programs.

Other Foods

Other foods should be made available to your joeys at a very early age Fresh water should be available to your joeys at all times.

Some foods which are recommended to add to your joeys diet are:

- Rolled Oats (An ideal introduction to solids) Grass with roots and soil attached
- Roo cubes Horse pellets
- Horse stud Mix Dairy meal
- Natural Muesli (unsweetened) Carrots, Apples, Celery, Sweet potato. (These can cause extreme pain)
- Soft Lucerne Hay - never feed fresh Lucerne or fresh clover

* Only crushed grains should be fed.
TOILETING

It is essential to stimulate your joeys cloaca after feeding, to induce urinating and defecating, this is normally done by the female kangaroo to all pouchied joeys, to aid in pouch hygiene and prevention of disease.

This is done with a tissue or toilet paper by tickling the cloaca to gently stimulate. With male joeys, care should be taken not to damage the penis. Do not rub the cloaca, this only needs to be tickled, being over zealous could cause irritation. Around 2kg a joey will usually stand and a gentle tickle will entice him to toilet himself. when you are sure your joey is able to toilet himself unaided, then discontinue Toileting process.

Joeys will be less stressed if toileted while still in their pouch for the first few times, until it has settled and feels secure in his new surroundings, as all this is very new to it as well.

The consistency of a joeys faeces varies according to both the age and diet of the joey, Stress can affect the consistency of your joeys faeces.

- Unfurred, joey faeces should be the consistency of custard.
- Just furred, joey faeces should be the consistency of toothpaste
- Furred joey should be starting to starting to pellet
- Well furred joey should be pelleting

PERSONAL RECORDS

It is a good idea to keep Personal records of all your joeys weights, illnesses, medications, and progress. These records can assist Veterinarians when your joey is ill, also to help you to refer back to for comparisons when you have other joeys with similar problems or for weight comparisons.

The card filing system is ideal for this, it is quick and easy to access, and may be added to at any time.

FENCING

Your nursery yards must have some access to sunlight, your inside joeys must have access to sunlight daily. The Sydney Wires Macropod committee recommends that your nursery yards be at least 10 metre x 5 metre, for joeys up to 280 days (eastern grey ) approximately 3.8kg, wallabies require a larger yard. Minimum rehabilitation yard are to be 20 metre x 10 metre, preferably 20 metre x 20 metre, or as large as possible with a shed for shelter and shade trees. Your fence should be 6’ or 1.8 metre high, must be predator proof against dogs and foxes. Must be free of all poisonous plants such as oleanders, rhubarb, azaleas, deadly night shade, green cestrum etc.

All joeys need to develop good strong muscle tone and lungs, so an area large enough for your joey to do good fast laps around is required. Fresh water should be made available at all times.
COMMON PROBLEMS AND DISEASES

Stress
Stress can be a major problem with handraising joeys, many factors can contribute to this problem, such as too much handling, being exposed to excessive noise, irregular feeding, insecurity, overheating, changes to diet, signs of stress can be, licking its forearms, constantly calling to mum, fur loss, scours. Raising two joeys of the same species together helps alleviate stress.

Overheating
If your joey becomes over heated it must be cooled slowly, never drop the temperature suddenly, plenty of fluids must be given to your joey to replace the fluids lost. This should be done orally with an electrolyte replacer such as Vytrate or Albicalb given frequently. If your joey will not take sufficient fluids orally then subcutaneous fluids must be given.

Hair Loss
There are several causes for hair loss in Macropods, the most common being stress. Stressed joeys loose their hair which can lead to hypothermia, inadequate diet. Keeping your joey too warm causes hair loss, particularly in wallaroo and red neck wallabies. Soap powders containing bleaches and irritants can also cause hair loss and skin irritation.

Fur loss can sometimes be caused by a fungal infection, these can be treated with an anti fungal cream eg. CANESTEN. If there is no change consult your veterinarian.

Fleas
Joeys can pick up fleas from domestic animals, these should be treated with a carbaryl or pyrethrum based powder. Sometimes a joey will come into care with lice, treat the same as for fleas.

Ticks
Kangaroo ticks appear in certain seasons in low scrub areas, these usually attach themselves to the kangaroo at the back of the neck and the ears. When a tick first attaches itself it has the appearance of a flat brown wattle seed with legs. These engorge on blood, burying their heads under the skin. They need to be removed with a pair of tweezers. When the tick has engorged itself, it will be an off white colour and can be as large as a marble, they then drop from the host animal and multiply on the ground. These are not a paralyses tick, but too many ticks on an animal can cause anaemia.

Kangaroo Pox
Caused by a pox virus, wart like lesions on the limbs, usually no treatment is required. These lesions will sometimes take months to disappear. The virus is carried by mosquitos or insects or by contact with infected animals.

Prolapse Of The Bowel
Sometimes occurs after diarrhoea, sometimes blood appears with the prolapse, other times just the exposed bowel. In most cases you should watch the joey and it will pop back in by
itself within an hour. It can pop in and out sometimes for a day or two. If it’s a bad prolapse or it doesn’t go back into place by itself it may require a stitch by your veterinarian, to hold it in place for a few days until it settles down. Do not put your joeys legs up into toileting position or toilet your joey when it has a prolapse as this will make it worse. If you are unable to get to a veterinarian within a reasonable time and the bowel is becoming inflamed and dry, you will need to apply an anti fungal or antibiotic cream such as K Y jelly, Canesten cream or Savlon antiseptic cream. Apply sufficient to prevent the prolapse from drying.

**Scours**
Many things can cause scours, poor hygiene can be a major cause, stress, change of or incorrect diet, thrush (candidiasis), coccidia. Never ignore scours as this is usually the first sign of other problems.

**Coccidiosis**
See attached copy of “Coccidia from a layman’s point of view”.

**Thrush (Candidia Albicans)**
Thrush is a yeast invasion. A gram stain done by your veterinarian will confirm this for you. The first symptoms of thrush are usually diarrhoea, usually a foul yeast like smell, sometimes yellowish/green sometimes frothy or of curdled appearance. As thrush progresses the mouth becomes sore with lesions and sometimes a rust coloured, crusty discharge appears.

You may treat thrush with Nilstat at a dose rate of 0.1ml per kilo of body weight. Nilstat will sometimes cause further diarrhoea before your joey starts to improve use 3 times a day for 3 to 5.days after or inbetween feeds NEVER in the milk

Causes: thrush can be caused by stress, poor hygiene, dirty hands of the carer (always wash your hands after handling each joey so as not to spread germs), cloaca sucking, however thrush will sometimes appear in the first couple of weeks due to the stress of being orphaned.

Oral antibiotics destroy the natural gut flora of your joey and can therefore cause thrush

**Toxoplasmosis**
Toxoplasmosis is shed in the faeces of young cats. Keep young cats away from stored feeds. There is no treatment available for the disease at this time, however Toxoplasmosis is not generally a problem in drier climates.

**Pneumonia**
Pneumonia can be caused through lack of warmth or inhalation of fluids into the lungs. Inhalation of fluids can be caused through the holes in teats being to large or from squeezing the bottle, causing the joey to gulp its fluids. Symptoms of pneumonia can be congestion sounds in chest, refusing bottle, snuffly after feeding or listlessness.

If your joey has pneumonia a course of antibiotics will need to be given to your joey, Baytril 50 is recommended at the dose rate of 1ml per 10 kilo, (1mg/kg). Baytril may be injected by intramuscular or subcutaneous injections.
Lumpy Jaw (Necrobacillosis)
Lumpy Jaw is a reoccuring bacteria which is contracted through punctures or teeth eruption it is also caused by eating stalky hay or sharp grains eg. oats or barley. Allowing your joey to eat soft fruit and excess bread can cause the jaw to become soft allowing penetration of the gums by the lumpy jaw bacteria.

Some joeys will loose weight, others will show signs of swelling in the jaw, salivating and bad breath. You must consult your veterinarian for treatment.

Prevention
There is now a vaccine which is commonly used in sheep for the prevention of footrot which is given at six monthly intervals as a preventative against lumpy jaw in kangaroos, these are available from veterinarians. This disease is usually only found in older joeys, the prognosis in affected animals is very poor.

Tetanus
Your joey should be vaccinated with a five in one vaccine at approx 3kg, then again at pre release. Treatment: consult your veterinarian. Clinical signs are muscle rigidity, hyperaesthesia and convulsions.

Euthanasia
This is an unpleasant task, but often a necessity, to save the animals from suffering needlessly.

The simplest way to euthanase a small joey is with the use of Solvent Ether or chloroform. If using either of these products always follow manufacturers instructions carefully and be certain to wear gloves. Do not use these products in confined spaces.
PRE-RELEASE
If your joey is to be taken somewhere else for pre-release now is the time to make that move. Your joey will settle much better if it is shifted while it is still having one bottle per day, it will help to settle your joey as this is a very stressful time for it. Your joey will join other joey’s the same age, so they can all be released together as a group.

RELEASE
Now that your joey has reached its required weight, and a suitable release site has been chosen, making sure that the site has plenty of feed and water, sufficient trees for shade and shelter, and is a safe area from shooters, then it is time for it to go back to its natural environment. The Sydney Macropod Committee recommends that your joey be sufficiently dehumanised so that it will at least move away when it is approached. That it be of the correct age and size for its species, in perfect health and covered by 5 in 1 vaccine. Your joey will require a sedative prior to transportation
GUIDELINES FROM THE SYDNEY MACROPOD COMMITTEE

These guidelines are recommended by Sydney Macropod committee

1. The animal be placed in a large bag and the end secured tightly.
2. As the animal has been sedated, it will sleep during the trip and will not become over stressed. Take care to support the animal’s neck, keeping its airways clear.
3. Preferred release times are spring and autumn.
4. Avoid travelling in the heat of the day.
5. Do not open the bag unnecessarily, you may risk the animal “coming too” suddenly.
6. Have water on hand. This should be sprayed onto the bag if the animal becomes heat stressed.
7. If you arrive at the release site earlier than expected and the animal is still under sedation, do not allow it out of the bag until sedation has worn off (Injuries may occur if the animal is set free whilst still under sedation.
8. Allow yourself enough time to stay at the release site until you are satisfied that your animal has settled in.

Recommended Ages And Minimum Weights Per Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Ages</th>
<th>Minimum Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Grey Kangaroo</td>
<td>15 - 18 months</td>
<td>15 kgs</td>
</tr>
<tr>
<td>Red Kangaroo</td>
<td>15 - 18 months</td>
<td>18 kgs</td>
</tr>
<tr>
<td>Wallaroo *</td>
<td>15 - 18 months</td>
<td>13 kgs</td>
</tr>
<tr>
<td>Swamp Wallaby *</td>
<td>18 - 24 months</td>
<td>10 kgs</td>
</tr>
<tr>
<td>Red Neck Wallaby *</td>
<td>16 - 22 months</td>
<td>11 kgs</td>
</tr>
</tbody>
</table>

* - Will need to be of sufficient size to be predator proof.
SPECIES IDENTIFICATION

**EASTERN GREY KANGAROO** (*Macropus Giganteus*)
Varying tones of grey with black points, narrow pink leather like strip above nostril which will darken with age. Pointed features.

**WESTERN GREY KANGAROO** (*Macropus Fuliginous*)
Chocolate brown in colour with black points, more delicate features than the Eastern Grey

* Grey Kangaroos have a hairy muzzle, with fine hairs in area between nostril and upper lip.

**RED KANGAROO** (*Macropus Rufus*)
Pale to red brick colour, white markings on face, square jaw, tail is grey at base and pale at the tip. Females are usually a blue grey colour.

**WALLAROO** (*Macropus robustus*)
Charcoal grey in colour, stocky body, large dog shape nose, flared nostrils, tail light grey with black tip. Females are usually a blue grey.

**SWAMP WALLABY** (*Wallabia bicolor*)
Dark rufous grey, very stocky, dark pear shaped nose, tail black, sometimes has white tip on tail. Rusty yellow under belly, lighter area on lower jaw, fore and hind limbs dark brown to black, very long thin tail.

**RED NECK WALLABY** (*Macropus rufogriseus*)
Large slender build, blue grey with the nape and shoulders pronounced reddish brown, belly pale grey, long thin tail, pale stripe down jaw line.
ACKNOWLEDGMENTS.

Sydney Wires  Macropod Committee  Macropod Guidelines
Wombaroo food products  Weight and measurements charts
Speare. R.  Clinical Assessment, Diseases and Management
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Dr David Blyde BVSc Dip Vet Wild Med.  Western Plains Zoo for assistance and advice with
treatment and medications.

To my good friend Robyn Whitby for her wonderful help and patience with the typing of these notes.
HELPFUL HINTS IN HANDRAISING JOEYS

1. The two important things to a young joey are correct temperature and strict hygiene.

2. Sew all sloppy joes at the neck and sleeves as joeys have been known to get their heads caught in the sleeve resulting in stress and sometimes death, Wombat joeys are very bad at this.

3. Lock your visitors away from your joeys, especially their kids.

4. When raising joeys in particular eastern greys, try to raise two together avoiding stress and this way they don’t bond as much with their carer.

5. TEAT SIZES. Every joey is different it's better to have the teat a little small than too big, but don’t let your joey tire it's self out trying to get the milk out of a hole that’s too small. Remember you can make it bigger but you can’t make it smaller again. I use a hypodermic needle heated red hot to make the hole for small joeys.

6. When raising kangaroo joeys 3kgs and over wallabies 1.5kgs and over, I don’t allow them to go outside until they have been in care about a month to allow them to settle down properly and quieten down. This way they don’t crash into the fences as much when allowed out for there first outing.

7. Never feed fresh lucerne or clover to your joey {let it dry for a couple of days first}. It will give your joey a big pain in the tummy.

8. When giving oral medication give it down the side of the mouth with a syringe and avoid the taste buds.

9. If your joey drinks too fast and sucks too hard use a glass bottle it slows them down as glass doesn't breathe.

10. When you find a joey if it has a pronounced thymus gland [Speares] This gland is a sign of a good immunity from it's mother. I have certainly found this seems to be correct.

11. Fleas can be a problem from dogs and cats. Use a carbryll based flea powder. Beware cats will sleep on your joey and smother it.

12. Always leave all air hole in your joeys clothing to let it regulate its own heating, wrapping too tight can cause over heating.

13. Always be aware of coccidia DON’T DELAY a faecal test a day can be to late. Sometimes a prolapsed bowl can follow after scour caused by coccidia .I have found most will go back into place naturally after about an hour but watch it carefully as sometimes a stich from your vet is required I have had several cases not severe and so far no stiches required. If this happens to you don’t toilet your animal or hold it's legs up as this aggravates the situation.

14. Always look before stepping back joeys love to sneak up and stand behind you, little bones break easily.
15. FENCING Your fence should be of netting and six feet high [not to keep your joey in but to keep next doors dog out] weld mesh and chain mesh can badly injure your animal if it gets a fright and hits the fence. Shade cloth makes good small interior yards for flighty animals eg hospital yards.

16. If you have a sick joey boil one cup of rice to three cups of water boil for five minutes then strain off one cup of water [you can then finish cooking your rice to use.] The rice water you have strained off is full of carbohydrate and can be mixed with vytrate or just fed straight to the joey when a little extra is needed or a break from milk is required. [Thanks to my good friend Dot Berris of Native Animal Network South Aust for this tip] I have tried it and it works.

17. I have discovered that using Mycostatin in small joeys is not advisable. I have used it a few times with the loss of three joeys it contains peppermint oil. and sodium phosphate which causes bowel evacuations which is the last thing you need for a joey with thrush. The size joey I am talking about are 3&400grm size but I wouldn’t advise its use for joeys of any size after reading the print out from the company. These ingredients are not present in Nilstat.

18. Red neck wallabies need a higher lipid content [fat] than most other macropods. Canola oil can be added to the milk to improve the fur sometimes fur loss is caused by not enough lipids in the diet.

19. Recently I had two 7kg E G joeys with dry flaky skin after consulting with zoo vets it was decided to give them E.F.A.z supplement this was given at 3mls per day in milk for 3 weeks or longer if required.

Enid Latham. Keeper Western Plains Zoo.
INTRODUCTION.

Over the last few years a large number of people have contacted me about coccidia and it has become apparent that little information is available that the carer can readily understand especially first time carers.

Coccidia is one of those horrible diseases where no matter how many cases you have had in your eastern greys you are never sure of the outcome. I gave up counting my cases when I reached fifty. They varied in sizes from 3kgs to 30kgs and there has been a lot of variation in symptoms.

The three most reliable symptoms have been refusing the bottle [don’t let it miss more than 2 before a faeces test] their eyes have that doughy look and they are hunched over with abdominal pain and lethargic. In some cases laboured breathing is found. Almost always the fur loses it’s shine and healthy look.

It can take from a few hours to a couple of weeks to lose a joey if it’s going to die from coccidia. Sometimes you will only find a dead joey. This has never happened to me, there have always been symptoms. Anything that is not normal for your joey is suspicious.

It appears that some stages during handraising seem more susceptible. These appear to be approx 4.5kg to 5kg then again at 6.5kg to 8kg. Of course any age is very susceptible.

Once a joey reaches that horrible never to be forgotten bloody diarrhoea stage you can sometimes save them with a lot of T-L-C and devoted nursing but usually by the time the mouth is very cold you can be pretty sure you have lost the fight.

WHAT CAUSES COCCIDIA?

The coccidia oocysts can survive in the ground a long time. So spelling yards doesn’t appear to help. My place was free of kangaroos for fourteen years. The yard was a normal family house yard. Only a few months after we shifted in with my joeys we had coccidia as bad as ever.

After ingesting the oocyst the protozoan invades the intestine wall by burrowing in and produces a massive population explosion. This prevents the intestine from absorbing anything that passes through. Fluids are also able to pass through the damaged lining back into the gut and are lost from the body. This causes dehydration and shock.

The damaged lining passes out as bloody looking diarrhoea. Whilst this is all going on inside your joey the last thing it feels like is milk just as you don’t like milk on an upset stomach. If the joey will drink milk by all means give it milk it needs all the goodness it can get.
TREATMENT.

Warmth is very important, If you are ill you often feel cold so keep your joey at a comfortable temperature.

Medication MUST be given very quickly this means you must get a faeces test done immediately. This is done by a float method and takes about 20 minutes for your vet to do. If your vet is busy then dose the joey with Baycox 1ml per 1kg by mouth. first and test the faeces later to save the joey as a few hours could mean the difference between life and death. If you live in the Dubbo area I will be only too happy to assist you with this test. day or night don’t hesitate to call me.

Carers have lost joeys with as few as 10 oocysts present on the slide and saved them with dozens. It appears to be a matter of how much damage is done to the intestines and how high your joey’s immunity is, not how many oocysts are being passed through. By the same token usually the more oocysts present means the more damage done.

Baycox by mouth [Toltrazura [25g/l] is the best treatment available at this time. I have been using this at slightly higher dose rate than the recommended dose with very good results. The dose rate I am using is 1ml per 1kg once a day for 3 days in a row. If there are many oocysts present in the faeces then you will need to give a course of antibiotics as well. Baytril 50 at 1ml per 10 kgs of joey once a day for 3 to 5 days. This can be given either intramuscular [i/m] or subcutaneously [s/c]. This will protect the joey from things like pneumonia and salmonella which may be seen simultaneously. When the joeys resistance is low due to the stress of the coccidia these diseases seem to take over and can cause death very quickly.

I test the faeces again about 3 days later then weekly until I’m sure the joey is completely free of coccidia. This does not mean they will not get it again they probably will. Our vets at the zoo do NOT recommend that Baycox be used as a preventative or we could end up with baycox resistant strains of coccidia.

FLUIDS

These should be given often and however you can get the joey to take them. Try to get it to take Vytrate or albi calb or any electrolyte replacer by bottle preferably. This is comforting to the joey and easy to keep tabs on what it is drinking. Always have a bowl at its side to encourage it to take more. If insufficient fluids are being taken Hartmans solution or 5% glucose should be given subcutaneously at least 3 times a day making the total fluids per day to a minimum of 10% of the total body weight of the joey. [combined oral and s/c] NEVER USE A SYRINGE TO GIVE FLUIDS ORALLY. because this can cause inhalation pneumonia leading to death. These fluids are the same as for human patients and are very cheap to purchase. They should always be kept on hand. If the joey is eating well not as much fluids will be required as they are receiving food value from the solids they are taking and are not totally dependent on the fluid intake.

PAIN.
If the joey appears to have a lot of pain you can obtain a pain killer from your vet or use 1/4 of a codaphin tablet twice daily for no more than 2 days or 1/8 of an aspalgin tablet dissolved in 1ml of water again twice daily for no more than 2 days. If it still appears to have a lot of pain consult your vet. Codeine slows down the gut allowing more nutrients to be absorbed before passing through in an animal that has diarrhoea. If caught early enough most joeys don’t get diarrhoea but if they do bleed from the bowel it can be fresh looking as if you have cut your finger or dark blood [very smelly] or just bloody faeces.

PREVENTION

Of course your yards should be kept clean but this only helps, it doesn’t prevent coccidia once it’s in the ground I used to believe it was in the grass but my yards are bare dirt and it’s worse than ever. Preventives such as amprolmix j are of no benefit. I used to go around all my joeys with a 2ml syringe of amprolmix every morning. However it is so foul tasting when the joeys see you coming they take off like a rocket and coccidia still ruled supreme.

PLASMA TRANSFERS

At the Zoo we take blood from an adult kangaroo that hopefully has a good immunity to coccidia. This blood is then spun to separate off the plasma content of the blood. This is then injected intravenously under anaesthetic at a rate of 10mls per 1kg body weight. The ideal weight to transfer a joey is 3kgs after the transfer it takes about 10 days to build up some immunity.

Of course this is NOT a cure just a preventative that seems to work I have at this time had 36 joeys transferred and have only lost one with coccidia.

This preventative measure was started by Dr David Blyde in 1992. Prior to this I lost 3 joeys in three months In my opinion this is a vast improvement. They still may contract the disease but not as severely.

COMPLICATIONS WITH COCCIDIOSIS

Pneumonia and salmonella are two common causes of death in young joeys when their resistance is low these diseases are brought on by the stress of already being sick salmonella is already present in the joey and the stress just triggers it off. This is why in serious cases we give the Baytril 50 for 3 to 5 days to fight off these infections before they get a hold. We have only been doing this for about 4 months with very good results.

PROLAPSE OF THE BOWEL

Prolapses sometimes occur after diarrhoea. Some times a small amount of bleeding is present other times just the exposed bowel.
in most cases the bowel just goes in by itself after about an hour. Sometimes popping in and out for a day or two. If it is a bad prolapse or it doesn’t return by itself it may require a stitch to hold it in place for a few days until it settles down again. TAKE IT TO YOUR VET.

DO NOT put your joey legs up [ toileting position ] or toilet while your joey has a prolapse or for a few days after. or this will make thing worse.

IS YOUR JOEY HEALTHY? Does it have a good immunity?

Richard Speares has written about the thymus which is situated at the base of the neck on either side of the middle below where your own adam’s apple can be found.

This gland should be most noticeable in the first week after being orphaned. So check all your joeys as soon as they come into care. Some joeys retain a pronounced Thymus throughout their entire time in care others lose them quickly. This is something I have taken a great deal of notice of over the past few years and have found that a very pronounced Thymus has always been a healthy joey.

TAILS.

Tails can tell a tale in a very healthy joey, You will find the base of it’s tail very thick and you cannot feel the bone when gently tapping it is healthy. If you can feel it’s bones easily then it’s not as healthy Speares goes into a lot of detail about the survival rate of joeys by the thickness of their tails.

BLOOD TESTS

At the time of a plasma transfer the Zoo takes a blood sample from the joey. This blood is then tested to find the amount of imunogloblins in the blood telling us how much immunity the joey has. The total protein level in the blood consists of Albumin and globulins and some others combined.

The lowest count I have ever seen was one of Robyn Whitbys joeys. Joe had a combined count of 9 [ He died a few weeks later ] The top reading was my joey Jena with a combined count of 71. This joey never contacted coccidia.

The combined counts are usually in the high 40’s and 50’s If the joey has a low count then you can take particular notice for any signs of illness. Watch that joey closely.

Coccidia is host specific which means the coccidia your poultry gets is not the same as that your joey gets.

As very little seems to be known about this disease amongst our carers the symptoms and problems you have may well help a fellow carer save another joey so please contact me with anything you think may be of help to others. ph. 068 872102
Acknowledgments.

Particular thanks go to Dr David Blyde BVSc Dip Vet Wild Med. Western Plains Zoo. Without whom we would not be using plasma transfers today.

Dr. Ted Finnie BVSc Veterinarian Merriwa For his advice on codeine.


From the John Keep refresher course for veterinarian proceedings 104 p104 to p305

25-1-99 NOTE IF YOUR JOEY IS REALLY ILL BAYCOX THE ANIMAL THREE DAYS IN A ROW I AM FINDING SOME STRAINS MUCH MORE SEVERE THAN OTHERS. PLEASE WATCH FOR TINY SYMPTOMS SUCH AS EYES AND STANCE.

Baycox now comes in two strengths one for poultry and one for pigs

Active ingredient TOLTRAZURIL 25g/L dose one ml per kg bodyweight [poultry]

50g/L dose half a ml per kg [pigs]

In more recent times I have been working with the theory that passive immunity could be transferred from the milk of goats [it is low in lactose] that have been exposed to coccidia and built an immunity this appears to be helping with the larger joeys if you are interested in this contact me on 02-68872102