

Neither dog nor cat – Part I: Small mammals

Linda Sorensen

Veterinary Nursing, Department of Applied Science and Allied Health, CPIT, PO Box 540, Christchurch
Straven Road Veterinary Centre, 8 Straven Road, Riccarton, Christchurch

Guinea Pigs (GPs)

Basic needs, husbandry, and environment

- Require vitamin C (10-30mg/kg daily) – pellets are supplemented but vitamin C oxidizes and may be lost after 90 days. Best to supplement vitamin C with fruits/veggies (kale, parsley, beet greens, chicory, spinach, red/green capsicums, broccoli, tomatoes, kiwi fruit, and oranges; grass can be a source of vitamin C as well). Vitamin C can be added to water but is unstable and will deteriorate within 24 hours.
- Very little tolerance for food changes; best to supply a variety early in life to avoid fussiness. Herbivores. Crude protein needs 13-18%, minimum fibre 10%. Pellets, grass hay, fresh veggies – limit fruit, rolled oats, cereals to treats. Hay should be available at all times for good gut health and to avoid boredom.
- Housing – good ventilation is crucial. GPs do not jump or climb; walls should be 30cm high (minimally). Wire flooring may increase leg and foot injuries (can go with thicker mesh) – solid flooring preferred. Chicken wire can cut the feet. Newspaper, wood shavings, and straw may be used. Hide box should be provided. Messy; require frequent cleaning and water changes.
- Ambient temperature range – 18-26°C is ideal; susceptible to hyperthermia (heat stroke).
- Social interaction – very social. Crowding or stress may result in hair pulling or ear nibbling. Best kept in single gender pairs. Do not house with rabbits as the dietary needs are different and larger rabbits can harm guinea pigs.

Restraint and handling

'Freeze or flight' response to perceived danger. When sick, may not tolerate handling well (and may go into cardiac arrest).

Normal 'abnormalities'

- Sebaceous gland hind end can become matted (older males); can be cleaned with meths or eucalyptus oil (wash off afterwards to avoid ingestion).
- Coprophagy throughout the day (may be a source of B vitamins and help with protein assimilation).
- Alkaline urine can be thick, cloudy, yellow, or white; with many crystals.

Breeding information (see chart for additional information)

- Dystocia common, especially if sow is not bred by 10 months of age (give birth by 12 months). Sows bred prior to reaching six months of age may not thrive as well as those bred after 8-10 months.

- Gap in pelvic symphysis palpable just before parturition (15mm two days prior; 3cm or more at parturition).
- Gender is easy to discern - male has straight slit whereas female has 'Y' for external genitalia.
- 'Copulatory plug' passes several hours after mating (solid mass of ejaculate).
- Rapid parturition.
- Consume the placenta.
- Pups are precocious (can start eating solids within a few hours), but should receive sow's milk for at least five days
- Urination and defecation occurs with stimulation for the first week.
- Can be fostered.

Common ailments and treatments

Dental disease

All teeth are continuously growing. With malocclusion, the maxillary cheek teeth tend to develop spurs toward the cheek; the mandibulars toward the tongue (which can result in entrapment). Upper incisors are normally shorter than the lowers. Signs of molar problems include anorexia, difficulty swallowing food, weight loss, 'slobbers'. Trimming needs to be done every 4-6 weeks. There is a strong genetic association with malocclusion – do not breed!

Cervical lymphadenitis

Streptococcus zooepidemicus. Occurs with abrasion of the oral mucosa. Can result in septicemia or pneumonia. Surgical removal or aggressive surgical drainage and flushing of the abscess. Isolate infected guinea pigs as the infection can spread to others via fomites.

Nutritional deficiencies

Scurvy – signs include lethargy, anorexia, painful joints, diarrhoea, and weight loss.

Skin disorders

- Nail overgrowth.
- Ringworm – Usually will not fluoresce. Treat with topical miconazole; griseofulvin is okay but teratogenic. Use malaseb washes.
- Mites, lice and fleas possible; sarcoptes most significant (severe pruritis, zoonotic) – treat with ivermectin, two doses. Fleas, mites, and lice can be treated with selamectin (Revolution) 6mg/kg (advised don't use on guinea pigs less than three months of age).
- Bumblefoot (pododermatitis) – occurs secondary to chronic trauma from wire flooring. Staphylococcus infection and osteomyelitis. Treated with antibiotics. Poor prognosis; prevent by proper housing and avoiding obesity. Very painful.
- Alopecia from barbering.
- Endocrinopathies (such as adrenal tumours) may result in hair loss.

Gut disorders

- Older guinea pigs may develop faecal impactions and may require gentle manual expression weekly.
- *Salmonella* from contaminated food (animal may NOT have diarrhoea). Other bacterial infections from food contamination possible as well.
- Protozoal infection with *Cryptosporidium wrairi* => diarrhoea (self-limiting, no treatment proven, zoonotic).

Respiratory disorders

Pneumonia (*Bordetella*, *Streptococcus*). May need treatment for 4-6 weeks with antibiotics. Viral pneumonia (possibly adenovirus) is uncommon, but carries high fatality. Pulmonary adenomas may be present in 30% of animals >3 years old.

Neurologic disorders

Lymphocytic choriomeningitis virus – meningitis and hind limb paralysis (zoonotic). *Chlamydia* conjunctivitis (self-limiting)

Musculoskeletal disorders

- Scurvy; can result in pathologic fractures.
- Osteoarthritis occurs, especially in hock joints in large guinea pigs).
- Ketamine-diazepam injections can cause nerve damage and self-mutilation at and distal to injection sites.

Reproduction

- Dystocia: C-section almost always indicated but can try oxytocin if 3cm gap present at symphysis; pups should be delivered within a 30-minute period.
- Ovarian cysts common, 0.5-7cm in diameter. Can result in hair loss in the flank region. Decrease fertility. Treated by ovariectomy.
- Pregnancy toxemia (ketosis) is seen in primiparous obese sows during last two weeks of gestation/first week post partum. Obesity and fasting contribute to ketosis, which can be seen in males as well. Severe signs within 24 hours of anorexia. Poor prognosis. Treat with supportive care, glucose, and possible steroids if shocky. Vitamin B injections can be given to improve appetite. Prevent by avoiding obesity and minimizing stress; don't introduce new diet during pregnancy. Exercise during pregnancy is also important; don't restrict to a small cage. Avoid exposure to high environmental temperatures as well.
- Mastitis can occur in sows housed in wet, dirty cages.
- Mammary gland tumours (in both males and females) (30% adenocarcinoma - rarely metastasize, but are locally aggressive); most are benign fibroadenomas.

Urinary

Calculi common. Males can become obstructed. Calcium oxalate may be associated with *Streptococcus* infection. Acidification of diet is not appropriate as guinea pigs can't deal with the acid load. Treat by flushing the bladder or surgical removal of stones, followed by low calcium diet. Can give regular fluids to maintain dilute urine. Don't breed as there is a genetic tendency toward stone formation.

Lymphoma

Occurs.

Administration of medications and fluids

- Fluid needs 100ml/kg/day plus dehydration.
- Routes:
 - Subcutaneous (SC) (between shoulders (note thick skin), 25-35ml/site).
 - Intramuscular (IM) (lumbar muscles and gluteals, no more than 0.3ml in one site).
 - Intraperitoneal (IP) (always warm fluids first).
 - Intravenous (IV) catheters are best placed under general anaesthesia – 24ga; lateral saphenous is easiest, can use jugular or cephalic as well.
- Drug contraindications
 - Gut issues (aka antibiotic enterotoxemia caused by clostridial overgrowth) can occur with penicillin, ampicillin, chlortetracycline, clindamycin, erythromycin, and lincomycin. Chloramphenicol can be given to reduce clostridial overgrowth. Best choices for antibiotics include trimethoprim-sulfa, chloramphenicol, and enrofloxacin. Ototoxicity seen with gentamicin, neomycin, and polymyxin B topicals. Guinea pigs receiving antibiotics should be given live bacterial culture supplements such as Benebac or live culture yogurt.

Diagnosics

- Blood testing sites – lateral saphenous, cephalic (both small), jugular (difficult to find sometimes, restraint an issue), ear veins for small amounts; maximum volume 0.5-0.7ml/100gm. Can overtrim nails for small amounts of blood (glucose testing).
- Urine pH 9.0
- Cytology – Kurloff cells – White blood cells (WBC) resembles lymphocyte but contains round or ovoid inclusions (Kurloff bodies). Highest in females during pregnancy.

Anesthesia and surgery

- Fast for 1-2 hours prior to anaesthesia.
- Mask induction and maintenance, non-rebreathing circuit.
- Heat support, turn every 15-30 minutes if you can, monitoring Doppler, pulse ox.
- Have client bring in food and provide it as soon as the guinea pig is awake.

Chinchillas

Basic needs, husbandry, and environment

- Nutrition – eat mainly during dark hours. 16-20% protein, 2-3% fat, 15-35% fibre. Pellets for chinchillas are longer to facilitate feeding style – on hind legs with food held in front feet for nibbling. Supplement pellets with grass hay and fresh veggies. Pellets alone provide insufficient fibre. Treats such as grains, dried apples, raisins, figs, hazelnuts, sunflower seeds should be limited to less than a teaspoon a day. Provide non-toxic branches for gnawing.
- Bedding – require daily dust baths 2-3cm deep and big enough to roll in – need special dust, can't just use beach sand or dirt. Live in burrows and rock crevices. Chew wood cages. Need hide boxes/pipes.
- Temperature range – environment 10-20°C, humidity <50%. Prone to heatstroke.
- Exercise – active and acrobatic. Need lots of space (multilevel).
- Social interaction – gregarious. House in pairs or single male, 2-6 females. Separate males from females during parturition and rearing of young.

Restraint and handling

Minimal restraint adequate. Will try to escape threats; rarely bite. Do NOT grasp by the tail.

Normal 'abnormalities'

- 'Fur slip' when frightened – shed patches of fur – regrowth takes 6-8 weeks.
- Coprophagy of nitrogen rich faeces.
- No scrotum, testes are in the inguinal canal or abdomen.
- Incisors are yellow.

Breeding information (see chart for additional information)

- Sexing done by measuring anogenital distance – larger in males (1-1.5cm); urinary papilla will be adjacent to anus in females.
- Seasonally polyestrous (late autumn to late spring).
- Open vulva with mucus at oestrus, perineal rubor.
- Dystocia uncommon; can occur with one large kit.
- 1-2 litters per year.
- Young are precocious; can be fostered onto a lactating female (sometimes even guinea pigs!) if needed. Solids at 1 week. Siblings may fight over food.
- Gender differentiation is difficult!
- Excrete copulatory plug 24 hours post mating.

Surgical and anaesthetic concerns and techniques – like all small mammals, mask induction is most commonly used and hypothermia is a big concern.

Common ailments and treatments

Dental disease

Malocclusions as seen in guinea pigs.

External parasites

Hair coat is very dense, so are not an issue.

Skin disorders

- Conjunctivitis secondary to excessive dust baths.
- Bite wound abscesses (surgical excision).
- Ringworm occurs but is uncommon (and will not fluoresce).
- Fur-chewing (self, others) may be behavioural and may respond to Prozac (fluoxetine hydrochloride).

Gut disorders

- Can't vomit (also rabbits, rats), so can develop 'choke' if given food items too large to swallow properly.
- Bloat (associated with clover hay, sudden food changes).
- Hairballs – treat with pineapple or papaya juice (enzymes may break down fur) and force-feeding high fibre food.
- Constipation occurs if there is not enough fibre in diet – laxative use as in kitties (furlax).
- Diarrhoea can occur with overfeeding of fresh greens, damp hay, or changes in diet and can eventually cause rectal prolapse.

Respiratory disorders

Pneumonia possible with overcrowding.

Neurologic disorders

- Heatstroke (ideal temp 18.3-26.7°C).
- Musculoskeletal disorders – tibial fractures are common, and do well with amputation.

Reproductive disorders

- Fur-ring can prevent retraction of penis (can result in urinary blockage) – remove with lubricant/cutting.
- Urinary – calcium carbonate uroliths can cause obstruction in males.
- Can carry human **herpesvirus 1**; normally harbour small numbers of **giardia**.

Administration of medications and fluids

- Try hiding tablets in raisins
- Routes:
 - Intraosseous – use the femur.
 - Intravenous – use the cephalic.
 - Intramuscular – use the back leg (quadriceps).
- Drug contraindications
 - Metronidazole may cause liver issues; better to treat giardia with fenbendazole.

Diagnosics

- Blood testing sites – lateral saphenous, cephalic (both small), jugular (difficult to find sometimes, restraint an issue); maximum volume 0.5-0.7ml/100gm.
- Urine pH 8.5; USG often >1.045, yellow to slightly red, cloudy.

Rabbits

Basic needs, husbandry, and environment

- Nutrition – feed early in the morning and at night. Like sweets – molasses or sucrose can be used to encourage appetite. Pellet diets can lead to obesity. Supplement with hay, chew log, and a variety of fresh veggies (cabbage, cauliflower leaves, broccoli leaves, kale, turnip greens, mustard greens, sunflower leaves, carrot tops, green bean vines). Excess greens can lead to gut issues. Fruits, grains, high-carbohydrate and fat-based treats should be avoided. Water intake 50-150ml/kg/day (very high). Can be allowed to graze on grass. Alfalfa hay is high in calcium and should be avoided if the rabbit is prone to sludgy urine. 15-22% fibre needed in adults.
- Bedding – provide a hide box. Can be trained to use litter tray as prefer to urinate and defecate in the same place consistently. Bucks will mark territory with faeces. Need enough room for a sleeping/resting space as well as activity space. Cages must be well-ventilated. In hospital, rubber mats prevent slipping and injury. Will chew anything/everything. Nylabones are a good chewing choice to put in the environment. Wire floors can result in pododermatitis.
- Temperature range – 4-28°C. Very little heat tolerance as only sweat from lips and are poor panters. Heat also inhibits water intake.
- Exercise – need space for good hopping (minimum three hops in any direction). Will burrow! Environmental enrichment is very important.
- Social interaction – strongly territorial (one bunny per cage), but will form large warrens and engage in mutual grooming and sleeping. Non-castrated males may fight. Groups of females should be okay; may urine mark territory.

Restraint

Always support hind end. Place into cage hind end first, facing you. Towels/mats help bunnies feel more secure so they are less likely to kick and scabble about.

Normal 'abnormalities'

- Coprophagy (cecotrophy) – use of E-collars will block coprophagy.
- Obligate nasal breathers.
- Serum calcium fluctuates depending on diet (not regulated within a small range) – results in Ca carbonate precipitate in urine (thick white urine). Pigments in urine range from white to yellow to red (normal).
- Stomach will not empty even after 24-hours of fasting.
- Adult rabbit stomach pH is very low and results in a sterile upper GI tract.

Breeding information (also see chart for additional information)

- Reproductive maturity varies with breed (small breeds 4-5 months, large breeds 5-8 months); does mature earlier than bucks.
- Induced ovulators, no oestrus cycle.
- Litter size varies (small breeds 4-5 normally, large breeds 8-12).
- Birth typically early morning; does pull hair for nesting (dewlap).
- Does nurse only once daily for just a few minutes.
- Will kill young that are not theirs. Orphans can be hand fed (TID recommended) – hypothermia a big problem.
- Anogenital stimulation needed for the first week.
- Solids introduced day 15, weaned by 5-6 weeks.
- Testicles do not descend into the scrotum until 12 weeks of age.

- Can rebreed within 24 hours of parturition; can produce up to 11 litters per year.
- Intact bucks will mount anything and everything.
- Pregnancy toxaemia (ketosis) can occur, obesity predisposes.

Surgical and anaesthetic concerns and techniques

- Difficult to intubate – tight access and laryngospasm.
- Always premedicate bunnies to make induction and recovery smoother.
- Always provide heat support and eye lubricant.
- Pain can present as decreased appetite, reduced grooming, lethargy, and teeth grinding. Buprenorphine or meloxicam may be given for analgesia.
- Keep warm post-op; environment should be 29-32 C.

Common ailments and treatments

Dental disease

Malocclusion common, don't breed. Can be caused by feeding a diet that does not wear down teeth appropriately.

Skin disorders

- Delicate skin is easy to cut with clippers.
- Abscesses are common and should be surgically excised.
- Ear mites (*Psoroptes cuniculi*) can be treated with ivermectin.
- Ulcerative pododermatitis occurs secondary to pressure sores on feet from rough/wire flooring.
- Moist dermatitis can occur in the perineal region ('hutch scald') or around face/neck from malocclusion (presence of *Pseudomonas* may add blue tinge to fur).
- Fly strike is common in summer months – maggots must be removed manually. Fly powder can be applied after cleaning the rabbit of whatever attracted the flies to begin with (usually faecal material around perineum). Clients will need to continue cleaning the bunny.
- Ringworm (*Trichophyton*, *Microsporum*) occurs; treat with griseofulvin.

Gut disorders

The most common clinical problems seen in rabbits involve the GI tract. Adequate fibre in the diet is very important and pellets should be supplemented with grass hay.

- Gastric stasis – assoc with high carbohydrate/low fiber diet. Hair accumulation possible. Ensure hydration is good, hydrate stomach contents, and administer metoclopramide. Surgical removal of stomach contents may be required. Note that trichobezoars are common in rabbits and are not necessarily pathologic.
- Obstructions occur – treatment is surgical.
- Enteritis and enterotoxemia – toxin from *Clostridium spiroforme*. Diarrhea +/- blood/mucus. Rapid progression to death. Treat with fluids, metronidazole, and increased fibre in the diet.
- Bacterial infections, viral infections, parasites (*esp coccidia* – *Eimeria* – in juveniles) are all possible causes of gut disease in bunnies.
- Calicivirus – faecal oral spread most common, but can be carried on water bottles and other fomites. Acute, high mortality. All pet rabbits in New Zealand should be vaccinated.

Respiratory disorders

Pasteurella is most common. It is transmitted in air or via fomites. Upper respiratory signs (conjunctivitis), pneumonia, abscesses, otitis, orchitis, or septicemia are all possible. *P. multocida* is hard to culture. Treat with enrofloxacin or ciprofloxacin for 2-3 months (recurrence common with 14 day treatment). *Bordetella* and *staphylococcus* infections also occur. Asymptomatic carriers are common; even after treatment we should still assume they will have carrier status. Supportive care includes clearing nares of discharge, nebulization, and excision of abscesses.

Neurologic disorders

- Glaucoma not uncommon in NZ white rabbits due to poor drainage of aqueous in the anterior chamber. Usually not painful, but can result in blindness. Medical treatment is unsuccessful. Typically detectable by five months of age.
- ‘Splay leg’ seen in young rabbits can be severe enough to result in paralysis; hereditary.

Musculoskeletal disorders

Rabbits have delicate bones and strong muscles, making them prone to traumatic vertebral subluxations or fractures.

Toxins

Dieffenbachia and oleander plants are both toxic to rabbits.

Can carry *bordatella bronchiseptica* which can cause illness in GPs.

Administration of medications and fluids

- Routes:
 - Intraosseous – use the greater trochanter of the femur or tibial crest.
 - IM in lumbar muscles. Avoid hamstring injections. Maximum 0.5ml per IM site.
 - Oral medications should be in suspension form, sweetened.
- Drug contraindications
 - Clindamycin, penicillins, cephalosporins, and erythromycin can cause enteritis. Parenteral penicillin is less likely to cause issues than oral penicillins.
 - Rabbits rapidly metabolize atropine, making it unpredictable to worthless in effect.

Diagnostics

- Blood testing sites
 - Ear veins (can cause thrombosis and skin slough).
 - Save cephalics for catheters, if possible.
 - Lateral saphenous – restrain on side.
 - Jugulars with sedation.
- Calcium levels are directly related to dietary calcium levels. Calcium is excreted in the urine.
- Cytology – lymphocytes usually more numerous than granulocytes (heterophils).
- Urinalysis – pH 6-8.2 (>8.0 associated with good health), USG1.003-1.036 (1.015 average). May appear turbid, orange, red or brown due to presence of porphyrins.

Mice and Rats

Basic needs, husbandry, and environment

- Nutrition – omnivores. Pellets are well balanced. Seeds should only be used for treats. Fresh fruits and veggies can be given but should be removed after 4-6 hours. Ceramic bowls are best.
- Bedding – solid floor if possible. Paper-based products are best for bedding rather than shavings.
- Temperature range – 18-26°C is ideal.
- Exercise – nocturnal.
- Social interaction – male mice housed together will fight. Rats are very social and prefer company to isolation.

Restraint and handling

- Lift by scooping; can be gently lifted by the base of the tail if scooping is inappropriate for the patient.
- Can be scruffed for injections.

- Sensitive to smells, so having the client bring in their rat or mouse with familiar smelling items (or nestled with the owner) may reduce anxiety.

Normal 'abnormalities'

- Porphyrin in tears results in red colour with stress or illness (differentiate blood from porphyrin with the Wood's lamp – porphyrin will fluoresce).
- Unable to regurgitate.
- Coprophagy.

Breeding information (see chart for additional information)

- Seasonally polyestrous.
- Copulatory plug.
- Avoid disturbing mom with young for at least a week post-partum; stockpile food and water, clean cage prior to birth.
- Gender easy to sort at birth by presence of nipples on the females, but fur growth will quickly obscure this. Anogenital distance will be greater in males than in females. Testicles easily seen once descended into scrotum at 4-5 weeks.

Surgical and anesthetic concerns and techniques

- Avoid prolonged fasting – can't vomit so not necessary.
- Keep patient warm (warm scrubs, warm water bottle for a bed, avoid using meths during prep, heat lamp placed above the patient), can secure patient to table (or warm water bottle) with tape.
- Induce via mask – non-rebreathing system.
- Abdominal breathing effort will increase with depth of anesthesia.
- Use pulse oximeter to monitor.
- Premedication indicated as may suffer from massive catacholamines with fear or pain and die.
- Consider positioning on a slight angle with the head elevated to reduce weight of viscera on diaphragm.
- Will remove any suture they can; gut is quite reactive so best avoided.
- Consider use of adhesive clear plastic drapes.
- Do everything possible to keep anesthetic time to a minimum – adequate preparation ahead of time and speedy closure – staples/glue – if possible.
- Post-operative analgesia is critical and essential.

Common ailments and treatments

Dental disease

Malocclusions, heritable.

Parasites

Pinworms, tapeworms.

Skin disorders

- Mites (host specific) result in alopecia, dermatitis, rough hair coat, and self-inflicted skin lesions.
- Barbering occurs (done by dominant individual), most commonly in females.
- Demodex possible but rare.
- Ring-tail (avascular necrosis) associated with low humidity and requires amputation.
- Abscess should be excised.

Respiratory disorders

Often times from dust in bedding. *Mycoplasma pulmonis* very common in rats; asymptomatic carriers possible. Antibiotic help alleviate symptoms, but don't clear the infection. Sometimes present as middle ear infections.

Neoplasia

Common; mammary fibroadenomas in rats and adenocarcinomas in mice.

Mice can develop **urinary obstructions**, secondary to infection/inflammation of accessory sex gland.

Rats develop chronic **renal failure** with proteinuria.

Administration of medications and fluids

- Routes
 - IV and IM not recommended due to difficult access and small muscle mass.
 - Do not exceed 3ml in mice and 10ml in rats in a single SQ injection site.
 - Do not exceed 0.03ml in mice and 0.3ml in rats for IM injections.
 - Maximum amounts for IP injection = 3ml (mice) and 10ml (rats) – given in lower right quadrant of abdomen.
- Drug information – antibiotics commonly used include enrofloxacin, ciprofloxacin, trimethoprim-sulfa, and chloramphenicol.

Diagnostics

- Blood testing sites – Blood collection can be done from tail veins. Collect no more than 0.14ml from mice and 1.3ml from rats. The saphenous vein can be used as well.
- Urinalysis – USG 1.022-1.050, pH 5-7.

	Rabbits	Guinea Pigs	Chinchillas	Mice	Rats
Life span	5-7 years	5-6 years	10 years	12-36 months	26-40 months
Adult weight male	varies	900-1200gm	400-500gm	20-40gm	250-500gm
Adult weight female	varies	700-900gm	400-600gm	22-63gm	225-325gm
Sexual maturity male	5-8 months	3 months	8 months	6 weeks	4-5 weeks
Sexual maturity female	5-8 months	2 months	8 months	6 weeks	4-5 weeks
Length of estrus cycle	induced ovulator	15-17 days	30-50 days	4-5 days	4-5 days
Gestation period	30-32 days	59-72 days (68)	105-118 days (111)	19-21 days	21-23 days
Litter size	4-12	1-13 (2-4)	1-6 (2)	7-11	6-13
Normal birth weight	varies	45-115gm (70-110)	30-50gm	1-1.5gm	4-6gm
Weaning age	4-6 weeks	21 days	6-8 weeks	18-21 days	21 days
Rectal temperature	101-104F	37.2-39.5	37-38	37.1	37.7
Heart rate	200-300	240-310 bpm	100-150	400-700	300-500

Table 1. Useful information

	Rabbits	Guinea Pigs	Chinchillas	Mice	Rats
Enrofloxacin*	5-15mg/kg PO,IM,SQ BID	5-15mg/kg PO,IM,SQ BID	5-15mg/kg PO,IM,SQ BID	5-10mg/kg PO,IM,SQ BID	5-10mg/kg PO,IM,SQ BID
Metronidazole	20mg/kg PO BID	20mg/kg PO BID	10-20mg/kg PO BID**	10-40mg/kg PO q24hr	10-40mg/kg PO q24hours
Griseofulvin	12.5mg/kg PO BID	25mg/kg PO q24hr	15-25mg/kg PO q24hr	15-25mg/kg PO q24hr	15-25mg/kg PO q24hr
Fenbendazole	10-20mg/kg PO, repeat 14 days	20mg/kg PO q24hr x 5 days	20mg/kg PO q24hr x 5 days	20mg/kg PO q24hr x 5 days	20mg/kg PO q24hr x 5 days
Ivermectin	0.2-0.4mg/kg SQ q10-14 days	0.2-0.4mg/kg SQ q10-14 days	0.2-0.4mg/kg SQ q10-14 days	2mg/kg topically on back	0.2-0.4mg/kg SQ q10-14 days
Selemectin	6mg/kg topically	6mg/kg topically	***	***	***
Meloxicam	0.3mg/kg PO or 0.2mg/kg SQ, q24hr	0.3mg/kg PO BID		0.2-0.3mg/kg PO BID	0.2-0.3mg/kg PO BID
Acepromazine	0.5-1.0mg/ kg IM	0.5-1.0mg/ kg IM	0.5-1.0mg/ kg IM	0.5-1.0mg/ kg IM	0.5-1.0mg/ kg IM
Buprenorphine	0.01-0.05mg/ kg SQ, IM, IV q6-12hr	0.05mg/kg SQ p8-12hr	0.05mg/kg SQ p8-12hr	0.05-2.5mg/ kg SQ, IP, IM q6-12 hr	0.02-0.5mg/ kg SQ, IP, IM q6-12hr
Diazepam	1-3mg/kg IM, IV	0.5-3.0mg/ kg IM	***	3-5mg/kg IM	3-5mg/kg IM
Ketamine	20-50mg/kg IM; 15mg/ kg IV	22-44mg/kg IM	20-40mg/kg IM	22-44mg/kg IM	22-44mg/kg IM
Medetomidine	0.25mg/kg IM	0.3mg/kg SQ, IM	***	0.1mg/kg SQ	0.1mg/kg SQ
Atipamazole	same volume as medetomidine	1mg/kg SQ	***	1.0-2.5mg/kg	1.0-2.5mg/kg

* Enrofloxacin can cause tissue necrosis at the site of injection. Use orally if possible; injections must be diluted to at least 1:1

** Use metronidazole with caution in chinchillas

*** dose not listed for this species

Table 2. Commonly used medications and doses

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