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Table-1: Antimicrobial and antifungal agents used in rodents

Agent	Dosage	Species / Comments
Amikacin	5mg/kg SC, IM q8-12h	
	8-16 mg/kg divided SC, IM, IV q8-24h	All species
	10 mg/kg SC, IM q12h	Hamsters/also administer fluid therapy
	10 mg/kg SC, IM q12h	Mice, rats, hamsters, gerbils
	10-15 mg/kg divided SC, IM, IV q8-24h	Chinchillas, guinea pigs
	15 mg/kg IM q12h	High peak dosing regimen as efficacious as divided regimens
Ampicillin	-	Do not use in hamsters, guinea pigs, chinchillas; may cause enterocolitis
	6-30 mg/kg PO q8h	Gerbils
	20-50 mg/kg PO, SC, IM q12h	Mice, rats
Amphotericin B (Fungizone, Bristol-Meyers Squibb)	0.11 mg/kg SC	Mice / use with caution; may cause renal toxicity
	0.43 mg/kg PO	Mice / candidiasis
Captan powder - (Orthocide, Chevron)	1tsp / 2 cups dust	Chinchillas /fungicide to prevent spread of dermatophytes between cagemates; add to dust box
Carbenicillin	100 mg/kg PO q12h	Mice, rats
	200 mg/kg IP[1]	Mice
Ceftiofur	1 mg/kg IMq24h	Guinea pigs / pneumonia
Cephalexin	50 mg/kg PO, IM divided q12-24h	Guinea pigs
Cephaloridine	10-25 mg/kg IM q8-24h	Guinea pigs
	10-25 mg/kg SC, IM q24h	Hamsters, mice, rats
Chloramphenicol	20-50 mg/kg PO q6-12h	All specie
	30-50 mg/kg PO, SC, IM, IV q8-12h	All species
	30-50 mg/kg PO, SC, IM q8-12h	Hamsters, mice, rats
	50 mg/kg PO q8-12h	Chinchillas, guinea pigs
	50 mg/kg PO, SC, IM q12h	Prairie dogs
	0.5 mg/ml drinking water	Mice
	0.83 mg/ml drinking water	Gerbils
	1 mg/ml drinking water	Guinea pigs
Chloramphenicol ophthalmic ointment	Topical to eyes q6-12h	All species
Chlortetracycline	10 mg/kg SC, IM q12h	Rats
	20 mg/kg PO, SC, IM q12h	Hamsters

	25 mg/kg PO, SC, IM q12h	Mice
	50 mg/kg PO q12h	Chinchillas
Ciprofloxacin	-	May cause arthropathies in young
(Cipro, Bayer)	5-20 mg/kg PO q12h	Prairie dogs
	5-15 mg/kg PO q12-24h	Chinchillas, guinea pigs
	7-20 mg/kg PO q12h	All species
	10 mg/kg PO q12h	Guinea pigs, hamsters, gerbils, mice, rats
	10-20 mg/kg PO q12h	Hamsters
Doxycycline	2.5 mg/kg PO q12h	All species
	5 mg/kg PO q12h	Mice, rats/ pneumonia; may give in combination with enrofloxacin; do not use in young and pregnant animals
	70-100 mg/kg SC, IM q7d	Mice, rats / use long-acting formulation
Enilconazole	-	Dermatophytosis
	Dip in a 0.2% solution q7d	Mice
Enrofloxacin	-	May cause arthropathies in young;
(Baytril, Bayer)		limit SC, IM injections; SC injections can be diluted in NaCl or lactated Ringer's solution
	5-10 mg/kg PO, IM q12h	Hamsters, mice, rats, prairie dogs / may combine with doxycycline for Mycoplasma in rats
	5-15 mg/kg PO, SC, IM q12h	Chinchillas, guinea pigs
	5-20 mg/kg SC, PO q24h	
	25-85 mg/kg q24h × 14 days	
	0.05-0.2 mg/ml drinking water × 14days	Mice / pasteurellosis
	0.1 mg/ml drinking water	Hamsters, gerbils, mice, rats
Enrofloxacin (E)/ doxycycline (D)	10 mg/kg (E) + 5 mg/kg (D) PO q12h	Rats / Mycoplasma
Erythromycin	-	Do not use in chinchillas, guinea pigs, hamsters (or use with caution)
	20 mg/kg PO q12h	Mice, rats
	0.13 mg/ml drinking water	Hamsters / outbreaks of proliferative ileitis; use with caution: can cause enterotoxemia

Furazolidone	30 mg/kg PO q24h	Hamsters
	5.5 mg/ml drinking water	Guinea pigs
Gentamicin	2 mg/kg IM q12h	Chinchillas / bacterial enteritis; Pseudomonas
	2-4 mg/kg SC, IM q8-24h	All species
	4-20 mg/kg IM q12h	Mice
	5 mg/kg SC, IM q24h	All species
	5-8 mg/kg SC, IM divided q8-12h	Chinchillas, guinea pigs, hamsters
	5-10 mg/kg SC, IM divided q8-12h	Mice, rats
	6 mg/kg SC q24h	Guinea pigs
	20 mg/kg SC q24h	Rats
	10 mg/kg drinking water or topical	Gerbils / nasal dermatitis
Griseofulvin	-	Dermatophytosis; do not use in pregnant animals; can cause diarrhea, leukopenia,anorexia[25]
	15-25 mg/kg PO q24h×14-28 days	Guinea pigs /doses up to 100mg/kg have been used
	25 mg/kg PO q24h×14-28 days	Chinchillas, hamsters, mice, rats, prairie dogs
	25 mg/kg PO q24 h× 30-60 days	Chinchillas /use with lime sulfur dips
	25-50 mg/kg PO q12 h× 14-60 days	All species
	25-50 mg/kg POq24h	Hamsters
	250 mg/kg PO q10d × 4 treatments on feed[37]	Prairie dogs
	1.5% in DMSO topical × 5-7 days	All species
Itraconazole	2.5-10.0 mg/kg q24h	Rats / vaginal candidiasis
	5 mg/kg q24h	Guinea pigs / systemic candiasis
	50-150 mg/kg q24h	Mice / blastomycosis
Ketoconazole	10-40 mg/kg PO q24h × 14 days	All species / systemic mycoses; candidiasis

	10 mg/kg PO q24h	Hamsters
	20 mg/kg q24h	Rats
Lime sulfur dip	Dip q7d × 4-6 treatments	All species / dermatophytosis; dilute 1:40 with water
Metronidazole	-	Anaerobes; add sucrose for palatability
	10-20 mg/kg PO q12h	Chinchillas / use with caution
	10-40 mg/kg PO q24h	Mice, rats
	20 mg/kg PO q12h	Guinea pigs
	20 mg/kg PO q12h × 3-5 days	All species
	20-40 mg/kg PO q12h	Prairie dogs
	2.5 mg/ml drinking water × 5 days	Mice
Neomycin	15 mg/kg PO q12h	Chinchillas, guinea pigs
	25 mg/kg PO q12h	Mice, rats, prairie dogs
	0.5 mg/ml drinking water	Hamsters / proliferative ileitis
	2.6 mg/ml drinking water	Mice, rats , gerbils
Netilmicin	6-8 mg/kg SC, IM, IV divided q8-24h	Chinchillas, guinea pigs / Pseudomonas
Oxytetracycline	5 mg/kg IM q12h	Guinea pigs / toxicity in guinea pigs reported
	10 mg/kg PO q8h	Gerbils
	10-20 mg/kg PO q8h	Mice, rats / Tyzzer's disease (mice); Mycoplasma pneumonia (rats)
	16 mg/kg SCq24h	Hamsters
	50 mg/kg PO q12h	Chinchillas, guinea pigs / toxicity in guinea pigs reported
	60 mg/kg IM q3d	All species
	100 mg/kg SC q24h	All species
	0.25-1.0 mg/ml drinking water	Hamsters
	0.4 mg/ml drinking water	Mice, rats
	0.8 mg/ml drinking water	Gerbils
Oxytetracycline (cont'd)	1 mg/ml drinking water	Chinchillas, guinea pigs / toxicity in guinea pigs reported
	3 g/L in drinking water	
Penicillin G	-	Do not use in guinea pigs, chinchillas
	22,000 IU/kg SC, IM q24h	Rats

Penicillin (benzathine	-	Do not use in chinchillas, guinea pigs
and procaine)	22,000 IU IM q24h	Rats
Sulfadimethoxine	10-15 mg/kg PO q12h	All species
	1 mg/ml drinking water	Chinchillas, hamsters, guinea pigs, mice, rats
	1 mg/ 4 g feed	Mice, rats
Sulfamerazine	0.8 mg/ml drinking water	Gerbils
	1 mg/ml drinking water	Chinchillas, hamsters, guinea pigs, mice, rats
Sulfamethazine	0.8 mg/ml drinking water	Gerbils
Sulfaquinoxaline	0.25-1.0 mg/ml drinking water	Rats
	1 mg/ml drinking water	Chinchillas, gerbils, guinea pigs, hamsters, mice
	0.05% feed	Rats
Terbinafine	10-30 mg/kg PO q24h × 4-6 wk	Antifungal
Tetracycline	10 mg/kg PO q8-12h	Guinea pigs / use with caution: toxicity reported
	10 mg/kg PO q24h	Guinea pigs / use with caution: toxicity reported
	10-20 mg/kg PO q8-12h	Hamsters, gerbils, mice, rats, prairie dogs
	20 mg/kg PO q12h	Chinchillas, guinea pigs, mice, rats
	20 mg/kg IM q24h	Gerbils
	0.3 – 2.0 mg/ml drinking water	Chinchillas
	0.4 mg/ml drinking water× 10 days	Hamsters / outbreaks of proliferative ileitis
	0.7 mg/ml drinking water	Guinea pigs / toxicity in guinea pigs reported
	2-5 mg/ml drinking water	Gerbils, mice, rats
	0.1% - 0.5% feed × 14 days	Rats
Trimethoprim / sulfa	-	Tissue necrosis may occur when given SC
	15-30 mg/kg PO, SC, q12h	Chinchillas, guinea pigs, hamsters, mice, rats, prairie dogs
	30 mg/kg PO, SC, IM q12h	All species
	48-96 mg/kg PO q24h	Rats
Tylosin (Tylan,	2-8mg/kg PO, SC, IM q12h	Hamsters / use with caution

Elanco)	10 mg/kg PO, SC, IM q12h	Chinchillas, guinea pigs, mice, rats / toxicity reported in guinea pigs
	10 mg/kg PO, SC, IM q24h	Chinchillas, guinea pigs, gerbils, mice, rats / toxicity reported in guinea pigs
	0.5 mg/ml drinking water	Gerbils, hamsters, mice, rats /PD in rats[14]; toxicity in hamster reported

Table-2: Antiparasitic agents used in rodents

Agent	Dosage	Species / Comments
Albendazole	25 mg/kg PO q12h × 2 days	Chinchillas / giardiasis
Amitraz (Mitaban,Upjohn)	1.4 ml/L topical q7-14d× 3-6 treatments	Gerbils, hamsters / demodecosis; apply with cottonball, brush; use with caution; not recommended in young
	0.3%solution topically q7d	Guinea pigs
Carbaryl powder (5%)	Topical q7d × 3 treatments	Chinchillas, guinea pigs / ectoparasites
Dichlorvos strip (5 cm long)	Suspend 15 cm above cage × 24 hr, then 2 × / wk × 3 wk	All species / ectoparasite
Dimetridazole	1 mg/ml drinking water	Mice, rats / gastrointestinal protozoa; not available in the United States
Fenbendazole	20 mg/kg PO q24h × 5 days	All species
	50 mg/kg PO × 5 days	All species / giardiasis; a lower does is generally preferred
	0.3% feed × 14 days	Mice / clinical trial for cestodes, pinworms
Fipronil (Frontline, Merial)	7.5 mg/kg topically q30-60d	Hamsters, mice, chipmunks / flea adulticide
Imidacloprid (Advantage, Bayer)	1/2 kitten dose topically	Prairie dogs
Ivermectin	Spray animals or topical drops, 4-5 times / yr	Mice/clinical trial for mite control; use1% ivermectin diluted 1:100 with 1:1 propylene glycol / water (0.1 mg/ml); topical behind ear
	0.2 – 0.4 mg/kg SCq7-14d	Chinchillas, guinea pigs, hamsters, prairie dogs, mice, rats /ectoparasites;

		preferred dosage appears to be 0.4 mg/kgq7d (higher does have also been reported); for Demodex, use q5-7d
	0.5 mg/kg SC, repeat q14d	Guinea pigs / sarcoptid mites
	8 mg/L drinking water×4 days /wk × 5 wk	Mice / pinworms
	25 mg/L drinking water×4 days / wk × 5wk	Rats /pinworms
Lime sulfur dip	Dip q7d × 6 wk	All species / ectoparasites; dilute 1:40 with water
Malathion powder (3%-5%)	Topical 3 × / wk × 3wk	Gerbils, hamsters, mice, rats/ ectoparasites
Malathion spray/ dip	Topical q7d × 3 treatments	All species/ ectoparasites; use 0.5% spray or 2% dip
Mebendazole	40 mg/kg PO q7d × 21 days	Mice, rats / pinworms
Metronidazole	10-40 mg/animal / day PO	Rats
	25 mg/kg PO q12h	Guinea pigs
	40 mg/kg PO q24h	Prairie dogs
	50 mg/kg PO q12h × 5 days	Chinchillas /giardiasis; use with caution
	70 mg/kg q8h	Hamsters
	2.5 mg/ml drinking water × 5 days	Mice, rats
Permethrin	0.25% dust in cage	All species /ectoparasites
	Cotton ball soaked in 5% solution	Place in cage 4-5 wk
Piperazine adipate	200 mg/kg PO q24h × 7 days, off 7 days, on 7 days	Rats /pinworms
	200-600 mg/kg PO q24h × 7 days, off 7 days, on 7 days	Gerbils
	500 mg/kg PO q24h	Chinchillas
	0.5 mg/ml drinking water × 21 days	Rats / pinworms
	3-5 mg/ml drinking water × 7 days, off 7 days, on 7 days	Hamsters
	4-7 mg/ml drinking water × 3-10 days	Guinea pigs, mice, rats
Piperazine citrate	100 mg/kg PO q24h × 2 days	Chinchillas
	2-5 mg/ml drinking water × 7 days, off 7 days, on 7 days	All species / pinworms
	4-5 mg/ml drinking water × 7 days, off 7	Mice, rats, prairie dogs

	days, on 7 days	
	10 mg/ml drinking water × 7 days, off 7 days, on 7 dasys	Guinea pigs, hamsters
Praziquantel	6-10 mg/kg PO, SC, repeat in 10 days	All species / cestodes
(Droncit, Bayer)	30 mg/kg PO q14d × 3 treatments	Gerbils, mice, rats
Pyrantel pamoate	50 mg/kg PO	Nematodiasis
Pyrethrin powder	Topical 3 × wk × 3 wk	Gerbils, hamsters, mice, rats /ectoparasites
	Topical q7d ×3 treatments	Chinchillas, guinea pigs / ectoparasites
Pyrethrin (0.05%) shampoo	Shampoo q7d × 4 treatments	Hamsters, mice rats / fleas
Quinacrine HCl	75 mg/kg q8h	All species / giardiasis n chinchillas
Selamectin	6 mg/kg topically	Guinea pigs
Sulfadimethoxine	10-15 mg/kg PO q12h	All species / coccidiosis
	25-50 mg/kg PO q24h × 10 days	Chinchillas, hamsters, guinea pigs / coccidiosis
	50 mg/kg PO once, then 25 mg/kg q24h× 10-20 days	All species / coccidiosis
Sulfamerazine	0.8 mg/ml drinking water	Gerbils / coccidiosis
	1 mg/ml drinking water	Chinchillas, hamsters, guinea pigs, mice, rats / coccidiosis
Sulfamethazine	0.8 mg/ml drinking water	Gerbils / coccidiosis
	1 mg/ml drinking water	Chinchillas , hamsters, guinea pigs, mice, rats / coccidiosis
	1-5 mg/ml drinking water	All species / coccidiosis
Sulfaquinoxaline	0.1% in drinking water for 14-21 days	All species / coccidiosis
Thiabendazole	50-100 mg/kg PO q24h × 5 days	Chinchillas / ascaridiasis
	100 mg/kg PO q24h × 5 days	Gerbils, guinea pigs, hamsters, mice ,rats

Table-3: Chemical restrain/anesthetic agents used in rodents

Agent	Dosage	Species / Comments
Acepromazine	-	See ketamine for combinations
	0.5-1.0 mg/kg IM	Chinchillas, guinea pigs, hamsters, mice, rats / preanesthetic; causes seizures in gerbils
Atipamezole	-	Medetomidine reversal
(Antisedan, Pfizer)	1 mg/kg SC	Guinea pigs, mice, rats
	1.0-2.5 mg/kg IP	Mice
Atropine	0.05-0.1 mg/kg SC	All species / some rats possess serum atropinesterase
	0.1-0.2 mg/kg SC, IM	Chinchillas, guinea pigs
	0.1-0.4 mg/kg SC, IM	Gerbils, hamsters, mice , rats
Diazepam	-	See ketamine for combinations
	0.5-3.0 mg/kg IM	Guinea pigs /sedation
	1-2 mg/kg IM	Guinea pigs/ calming effect for intense pruritus or sows apprehensive of young
	3-5 mg/kg IM	Gerbils, hamsters, mice rats / sedation
Enflurane (Ethrane, Baxter)	To effect	Guinea pigs / chamber induction; MAC=2.17%[62]
Fentanyl / droperidol (Innovar – Vet, Mallinckrodt)	-	Sedation; anesthesia; dilute 1:10 to reduce chance of inflammation at injection site; irritation can result in self-mutilation; caution: do not use in gerbils or hamsters
	0.06-0.3 ml/kg IM	Mice / sedation
	0.1-0.5 ml/kg IM	Rats / sedation
	0.13-0.16 ml/kg IM	Rats / sedation
	0.2-0.3 ml/kg IM	Mice / sedation
	0.22-0.88 ml/kg IM	Guinea pigs / sedation; inflammation at injection site at high end of dose range
	0.3-0.5 ml/kg IM	Mice, rats / anesthesia
Fentanyl / fluanisone	-	Anesthesia
(Hypnorm, Janssen)	0.2-0.5 ml/kg IM	Mice, rats
	0.3-0.6 ml/kg IP	Mice, rats
	0.5-1.0 ml/kg IM	Guinea pigs
Fentanyl / fluanisone	-	Anesthesia; 45 to 60 min duration

(F) / diazepam (D)	(F) 0.4 ml/kg IP (D) 2.5 mg/kg IP	Rats
Fentanyl / fluanisone	(F) 0.4 ml/kg IP	Mice
(F) / diazepam (D)	(D) 5 mg/kgIP	
(cont'd)	(F) 1 ml/kg IM	Guinea pigs
	(D) 2.5 mg/kg IM	
Fentanyl / fluanisone	-	Anesthesia; 45 to 60 minute duration; 1 part
/ midazolam		Hypnorm, 1 part midazolam, 2 parts water
	2.7 m/kg IM, IP	Rats
	8 ml/kgIM, IP	Guinea pigs
	10 ml/kg IM, IP	Mice
Glycopyrrolate	0.01-0.02 mg/kg SC	All species / excess oral or respiratory mucus
Halothance	2%-5% induction; 0.25%-3.0% maintenance	All species
Isoflurane	2%-5% induction; 0.25%-4.0% maintenance	All species / anesthetic of choice
Ketamine	-	Ketamine combinations follow
	20-40 mg/kg IM	Chinchillas, hamsters / light sedation; heavy sedation at higher doses in hamsters (marked individual variation)
	22 mg/kg IM	Mice, rats / light sedation; heavy sedation at 44 mg/kg in mice and 25-40 mg/kg in rats
	22-44 mg/kg IM	Guinea pigs /light sedation; heavy sedation at higher doses (marked individual variation)
	40-60 mg/kg IM	Gerbils /light sedation; heavy sedation at higher does (marked individual variation)
Ketamine (K) /	(K) 40 mg/kg	Chinchillas / anesthesia
acepromazine (A)	(A) 0.5 mg/kg IM	
Ketamine (K) /	(K) 20-30 mg/kg	Guinea pigs / anesthesia
diazepam (D)	(D) 1-2 mg/kg IM	
	(K) 20-40 mg/kg	Chinchillas /anesthesia
	(D) 1-2 mg/kg IM	
Ketamine (K)/	(K) 40 mg/kg	Guinea pigs / 20-30 min duration of
medetomidine (M)	(M) 0.5 mg/kg IM, IP	anesthesia
	(K) 50-75 mg/kg	Mice/ anesthesia; minor procedures; use the
	(M) 10 mg/kg IP	higher dose of ketamine in females; (M)

		reversal is atipamezole
	(K) 75 mg/kg	Rats, gerbils / surgical anesthesia Q
	(M) 0.5 mg/kg IP	
Ketamine (K) /	(K) 75 mg/kg	Mice, hamsters / surgical anesthesia
medetomidine (M)	(M) 1 mg/kg IP	
(cont'd)	(K) 90 mg/kg	Rats / 20-30 min duration
	(M) 0.5 mg/kg IP	
	(K) 200 mg/kg	Mice / 20-30 min duration
	(M) 0.5 mg/kg IP	
Ketamine (K)/	(K) 5-10 mg/kg (M)	Chinchillas, guinea pigs, prairie dogs
midazolam (M)	0.5-1.0 mg/kg IM	
Ketamine (K) /	(K) 20-40 mg/kg	Guinea pigs / light anesthesia
xylazine (X)	(X) 2 mg/kg IM	
	(K) 35-40 mg/kg	Chinchillas / anesthesia
	(X) 4-8 mg/kg IM	
	(K) 50 mg/kg	Gerbils / anesthesia
	(X) 2 mg/kg IP	
	(K) 50 mg/kg	Mice / anesthesia
	(X) 5 mg/kg IP	
	(K) 75-95mg/kg	Rats / anesthesia
	(X) 5 mg/kg IM, IP	
	(K) 80 mg/kg	Hamsters / anesthesia
	(X) 5 mg/kg IM, IP	
Medetomidine	-	See ketamine for combinations
(Dormitor, Pfizer)	0.03-0.1 mg/kg SC	Mice, rats / light to moderate sedation
	0.1 mg/kg SC	Hamsters / light to moderate sedation
	0.1-0.2 mg/kg SC	Gerbils / light to moderate sedation
	0.3 mg/kg SC	Guinea pigs / variable effects
Midazolam (Versed, Roche)	1-2 mg/kg IM	All species / preanesthetic
Nalorphine	2-5 mg/kg IV	All species / narcotic reversal
Naloxone (Narcan, Endo Labs)	0.01-0.1 mg/kg SC, IP	All species / narcotic reversal
Pentobarbital	-	Anesthesia; not recommended; marginal analgesia; autonomic depression; give diluted in sterile saline (<10 mg/ml)
	30-45 mg/kg IP	Guinea pigs, rats
	35-40 mg/kg IP	Chinchillas

	50-90mg/kg IP	Gerbils, hamsters, mice
Pipothiazine palmitate	-	Long-acting neuroleptic drug; antipsychotic (experimental)
	25 mg/kg SC q5wk	Rats
Propofol (Rapinovet, Mallinckrodt)	-	Anesthesia, induction
	3-5 mg/kg IV	Prairie dogs
	7.5-10.0 mg/kg IV	Rats
	12-26 mg/kg IV	Mice
Sevoflurane	To effect	All species / anesthesia
Tiletamine / zolazepam (Telazol, Fort Dodge)	-	Tiletamine / zolazepam combinations follow
	20-40 mg/kg IM	Chinchillas, rats / anesthesia
Tiletamine / zolazepam (T) / xylazine (X)	(T) 20 mg/ kg (X) 10 mg/kg IP	Gerbils / anesthesia
	(T) 30 mg/kg (X) 10 mg/kg IM, IP	Hamsters / anesthesia
Xylazine	-	See ketamine, tiletamine / zolazepam for combinations
Yohimbine (Yobine, Lloyd)	0.5-1.0 mg/kg IV	All species / xylazine reversal

Table-4: Analgesics used in rodents

Agent	Dosage	Species / Comments
Acetaminophen (Tylenol Syrup, McNeil)	1-2 mg/ml drinking water	All
Acetylsalicylic acid (aspirin)	50-100 mg/kg PO q4h	Guinea pigs
	80-85 mg/kg PO q4h	Guinea pigs
	100 mg/kg PO q48h	Rats
	100-150 mg/kg PO q4h	Gerbils, hamsters, mice, rats
	100-200 mg/kg PO q608h	Chinchillas
	120 mg/kg PO q4h	Mice
	240 mg/kg PO q24h	Gerbils, hamsters
Buprenorphine (Buprenex, Reckitt & Colman)	0.01-0.05 mg/kg SC, IV q8-12h	Gerbils, hamsters
	0.02-0.5 mg/kg SC, IV, IP q6-12h	Rats
	0.05 mg/kg SC q812h	Chinchillas, guinea pigs

	0.05 mg/kg SC IM	Rats /combine with carprofen (5-10 mg/kg)
	0.05-0.1 mg/kg SC q6-12h	All species
	0.05-2.5 mg/kg SC, IP q6-12h	Mice
	0.1-0.2 mg/kg SC q8h	Gerbils
	0.1-0.5 mg/kg SC q8-12h	Rats
	0.5 mg/kg SC q8h	Hamsters
Butorphanol	0.2-2.0 mg/kg SC, IP q2-4h	Rats, mice
(Torbugesic, Fort	0.2-2.0 mg/kg SC, IM q4h	Chinchillas
Dodge)	0.4-2.0 mg/kg SC q4-12h	Guinea pigs
	1-5 mg/kg SC, q4h	Gerbils, hamsters, mice
	2 mg/kg SC q2-4h	Guinea pigs
Carprofen (Rimadyl,	-	Nonsteroidal, anti-inflammatory
Pfizer)	1 mg/kg PO q12-24h	Prairie dogs
	1.5 mg/kg PO q12h	Rats
	1-2 mg/kg PO q12-24h	Guinea pigs
	4 mg/kg SC q24h	Chinchillas
	4 mg/kg SCq24h	Guinea pigs
	5 mg/kg SC q24h	Gerbils, hamsters, mice, rats
	5-10 mgkgPO	Rats /can combine with buprenorphine (0.05 mg/kg)
Codeine	-	Narcotic
	10-20 mg/kg SC q6h	Mice
	60 mg/kg SC q4h	Rats
Flunixin meglumine	-	Nonsteroidal anti-inflammatory
(Banamine, Schering)	0.3-2.0mg/kg PO, IM, IV q12-24h	Mice
	1.1-2.5 mg/kg SC, IM q12h	Rats
	1-2 mg/kg SC	Guinea pigs
	1-3 mg/kg SC q12h	Chinchillas
	2.5 mg/kg SC q12-24h	Gerbils, hamsters, mice, rats
	2.5-5.0 mg/kg SC q12-24h	Guinea pigs
Ibuprofen	-	Antiinflammatory
	7-15 mg/kg PO q4h	Mice
	10 mg/kg PO q4h	Guinea pigs
	10-30mg/kgPO q4h	Rats
Ketoprofen (Ketofen,	1 mg/kg SC, IM q12-24 h	Chinchillas, guinea pigs
Fort Dodge)	1-3 mg/kg SC, IM q12-24h	Prairie dogs; doses of 3-5 mg/kg have been used

	5 mg/kg PO, IM q24h	Rats
	5 mg/kg SC	Gerbils, hamsters, rats
Meloxicam	-	Nonsteroidal anti-inflammatory
(Metacam, Boehringer Ingelheim Vetmedica)	1-2 mg/kg PO, SC	Mice, rats
Meperidine	10-20 mg/kg SC, IM q2-3h	Guinea pigs, mice, rats
(Demerol, Winthrop-Breon)	20 mg/kg SC, IM q2-3h	Gerbils, guinea pigs, hamsters, mice, rats
Morphine	-	Narcotic
	2-5 mg/kg SC q2-4h	Gerbils, hamsters, mice, rats
	2-5 mg/kg SC, IM q4h	Guinea pigs
	10 mg/kg SC, IM q4h	Guinea pigs
Nalbuphine (Nubain,	1-2 mg/kg IM q3h	Guinea pigs
Endo Labs)	4-8 mg/kg IM q3h	Gerbils, hamsters, mice, rats
Oxymorphone	-	Narcotic
	0.2-0.5 mg/kg SC, IM q6-12h	Gerbils, guinea pigs, hamsters, mice, rats
Pentazocine (Talwin, Sanofi Winthrop)	10 mg/kg SC q2-4h	Gerbils, guinea pigs, hamsters, mice, rats
Piroxicam (Feldene,	-	Nonsteroidal anti-inflammatory
Pfizer)	3.4-2.0 mg/kg PO	Mice

Table-5: Emergency drugs used in rodents

Agent	Dosage	Species / Comments
Atropine	0.05-0.1 mg/kg SC	All species / bradycardia; some rats possess serum atropinase
	0.1-0.2 mg/kg SC, IM	Chinchillas, guinea pigs
	0.4 mg/kg SC, IM	Gerbils, hamsters, mice, rats
	10 mg/kg SC q20 min	All species / organophosphate overdose
Calcium gluconate	100 mg/kg IP	Chinchillas / hypocalcemic tetany; eclampsia
	100 mg/kg IM	Guinea pigs / dystocia; follow with 1 IU oxytocin (see Table 51)
Dexamethasone	-	All species / anti-inflammatory
	0.6 mg/kg IM	Guinea pigs / pregnancy toxemia
	4-5 mg/kg SC, IM, IP, IV	All species / shock

Diazepam	1-2 mg/kg IM	Guinea pigs /calming effect for intense pruritus
	1-5 mg/kg IM, IV, IP, IO	All / treatment of seizures
Diphenhydramine	-	Antihistamine; anaphylaxis
(Benadryl, Parke-Davis)	5 mg/kg SC	Guinea pigs
Dopamine	0.08 mg/kg IV	Guinea pigs / hypotension
Doxapram	-	Respiratory stimulant
	2-5 mg/kg IV, IP	Guinea pigs
	5-10 mg/kg IV, IP	Chinchillas, gerbils, hamsters, mice, rats
Ephedrine (Marax, Pfizer)	1 mg/kg IV	Guinea pigs / antihistamine; stimulant
Epinephrine	0.003 mg/kg IV	Guinea pigs / cardiac arrest
Furosemide	-	Diuretic for edema, pulmonary congestion, ascites
	1-4 mg/kg SC, IM q4-6h	All species
	5-10 mg/kg SC, IM q12h	All species
Glycopyrrolate	0.01-0.02 mg/kg SC	All species / bradycardia
Lactated Ringer's solution	10-25 ml/kg IV	Give slowly over 5-10 min (if unsuccessful, administer IP)
Vitamin C (ascorbic acid)	50 mg/kg SC, IM	Guinea pigs / ascorbic acid deficiency (scurvy)

Table-6: Miscellaneous used in rodents

Agent	Dosage	Species / Comments
Aluminum hydroxide	20-40 mg/animal PO prn	Hyperphosphatemia caused by renal failure
Aminophylline	50 mg/kg	Guinea pigs
Atropine	0.05-0.1 mg/kg IM, SC	All species / preansethetic
	10 mg/kg SC q20 min	All species / organophosphate toxicity; may cause cardiovascular irregularities in guinea pigs
Atropine (1%) / phenlephrine (10%)	Topical to eyes	All species/ mydriasis for nonalbino eyes
Calcium EDTA	25 mg/kg SC q6-12h	Prairie dogs / lead chelation
	30 mg/kg SC q12h	Chinchillas, guinea pigs / lead chelation
Chlorpheniramine maleate	0.6 mg/kg PO q24h	Guinea pigs / antihistamine
Cimeidine (Tagamet,	5-10 mg/kg PO, SC, IM, IV q6h-	All species / gastric, duodenal ulceration;

Smith Kline Beecham	q12h	esophagitis, gastroesophageal reflux
Cisapride (Propulsid, Janssen)	0.1-0.5 mg/kg PO q12h	All species / enhance gastrointestinal motility; not commercially available in the United States
	0.5 mg/kg PO q8-12h	Chinchillas, guinea pigs
Cyclophosphamide	300 mg/kg IP q24h	Guinea pigs / antineoplastic
Dexamethasone	-	Antiinflammatory
	0.5-2.0 mg/kg PO, SC, then decreasing dose q12h × 3-14 dasy	All species
	0.6 mg/kg IM	All species
Digoxin	0.05-0.1 mg/kg PO q12-24h	Hamsters / dilated cardiomyopathy
Diphenhydramine	-	Antihistamine; anaphylaxis
(Benadryl, Parke-	1-2 mg/kg PO, SC q12h	Chinchillas, hamsters, mice, rats
Davis)	5 mg/kg SC prn	Guinea pigs
	7.5 mg/kg PO[1]	Guinea pigs
Dopamine	0.08 mg/kg IV prn	Guinea pigs / hypotension, especially anesthetic related
Ephedrine (Marax, Pfizer)	1 mg/kg PO, IV prn	Guinea pigs / antihistamine; anaphylaxis
Epinephrine	0.003 mg/kg IV prn	Guinea pigs / cardiac arrest
Furosemide	-	Diureticfor pulmonary congestion, edema, ascites
	1-4 mg/kg IM q4-6h	All species
	2-5 mg/kg PO, SC q12h	Chinchillas, guinea pigs
	2-10 mg/kg PO, SC q12h	Hamsters, mice, rats
	5-10 mg/kg SC, IM q12h	All species
Heparin	5 mg/kg IV prn	Guinea pigs / disseminated intravascular coagulation
Human chorionic gonadotropin (hCG)	1000 USP units / animal IM, repeat in 7-10 days	Guinea pigs / cystic ovaries
Hydralazine	1 mg/kg IV prn	Guinea pigs / antihistamine
Insulin	2 U/animal SC	Hamsters
Kaolin pectin	0.2 ml PO q6-8h	Guinea pigs / antidiarrheal
Lactated Ringer's solution	10-25 ml/kg IV bolus over 5-10 min	Warm to 37°C
	50-100 ml/kg SC, IV, IO q24h	All species / maintenance fluid requirements
Lactobacilli	-	All species / PO during antibiotic treatment

		period, then 5-7 days beyond cessation; give 2 hr before or 2 hr after antibiotic treatment
Loperamide HCl ((modium A-D, McNeil)	0.1 mg/kg PO q8h × 3 days, then q24h × 2 days	All species / enteropatheis (diarrhea); give in 1 ml water
Leuprolide acetate depot (Lupron Depot, TAP Pharmaceuticals)	0.2-0.3 mg/kg IM q28d	Guinea pigs / cystic ovaries
Metoclopromide (Reglan, Robins)	0.2-0.1 mg/kg PO, SC, IM q12h	All species / gastric stasis
Neomycin / dexamethasone / polymyxin B ophthalmic (Maxitrol, Alcon)	Topical to eyes q8-12h	All species / ophthalmic preparation; may cause gastrointestinal stasis from steroids
Oxytocin	0.2-3.0 IU/kg SC, IM, IV	All species / delayed parturition if unobstructed; caution in guinea pigs: fusion of pubic symphysis occurs if first breeding does not occur before 6-9 mo of age, resulting in dystocia; if no young produced 15 min after 1 IU/ animal, cesarean section is indicated
Oxytocin (cont'd)	1 IU/kg SC, IM	Rats
	1-2 IU/animal IM	Guinea pigs / uterine contraction; milk letdown
	6.25 IU/kg SC	Mice / milk letdown
Phenobarbital	10-20 mg/kg IV, IP	Guinea pigs / seizures
Potassium citrate	10-30 mg/kg PO q12h	Guinea pigs
Prednisone	0.5-2.2 mg/kg PO, SC, IM	All species / anti-inflammatory
Pseudoephedrine (Robitussin, Robins)	1.2 mg/animals PO q12h	Chinchillas / antihistamine
Sucralfate (Crafate, Hoechst Marion	25-50 mg/kg PO	All species / oral, esophageal, gastric, and duodenal ulcers
Roussel)	50 mg/kg PO	All species
Theophylline	10 mg/kg PO q8-12h	Prairie dogs
Tropicamide (1%)	Topical to eyes	All species / mydriasis in albino eyes
Vitamin A	50-500 IU/kg IM	Guinea pigs, hamsters

	10 mg β-carotene / kg of feed	Guinea pigs
	2 µg vitamin A palmitate / g food	Hamsters
Vitamin B complex (small animal)	0.02-0.2 ml/kg SC, IM	All species/ B_1 (100 mg/ml), B_2 (2 mg/ml), B_{12} (0.1 mg/ml)
Vitamin C (ascorbic acid)	10-30 mg/kg PO, SC, IM	Guinea pigs / maintenance
	20-200 mg/kg SC, IM	Guinea pigs / treatment of deficiency
	50-100 mg/animal PO, SC daily	Guinea pigs / treatment of deficiency; start parenteral, then PO until resolution of clinical signs
	0.2-0.4 mg/ml drinking water	Guinea pigs / prevents deficiency; change daily
Vitamin D	200-400 IU/kg SC, IM	All species
Vitamin E / selenium (Bo-Se, Schering)	0.1 ml / 100-250 g SC	All species
Vitamin K_1	1-10 mg/kg IM q24h × 4-6 days	All species / warfarin poisoning; not used in acute cases
	2.5-5.0 mg/kg IM q24h × 21-28 days	All species / brodifacom poisoning; menadiols not used in acute cases

Appendix-1: Common and scientific names of rodents

Common Name	Other Common Names	Scientific Name
Chinchilla	Long-tailed chinchilla	Chinchilla laniger
Chipmunk	Siberian chipmunk; Korean chipmunk; Japanese squirrel	Tamias sibericus (Eutamias sibericus)
Degu	Common degu	Octodon degus
Duprasi	Fat-tailed gerbil	Pachyuromys duprasi
Gerbil	Mongolian gerbil; clawed jird	Meriones unguiculatus
Guinea pig	Cavy	Cavia porcellus
Hamster, Chinese	Striped hamster	Cricetulus griseus
Hamster, golden	Syrian hamster; common hamster	Mesocricetus auratus
Hamster, golden	Syian hamster; common hamster	Mesocricetus auratus
Jird	Shaw's jird	Meriones shawii
Mouse	Common mouse	Mus musculus
Prairie dog	Black-tailed prairie dog	Cynomys ludovicianus
Rat	Brown rat	Rattus norvegicus

Appendix-2: Hematologic and serum biochemical of rodents

Measurement	Mouse	Rat	Gerbil	Hamster	Guinea pig	Chinchilla	Prairie dog
PCV(%)	35-40	35-45	35-45	45-50	35-45	27-54	36-54
RBC (10/il)	7-11	7-10	7-8	7-8	4-7	5.6-8.4	5.9-9.4
Hb (g/dl)	10-20	12-18	14-16	16.6-18.6	11-17	11.8-14.6	12.7-19.6
WBC (10/il)	4-12	5-23	7.5-10.9	7-10	7-14	5.4-15.6	1.9-10.1
Neutrohils (%)	5-40	10-50	22	18-40	20-60	39-54	43-87
Lymphoctes (%)	30-90	50-70	75	56-80	30-80	45-60	8-54
Monocytes (%)	0-10	0-10	0-4	2	2-20	0-5	0-12
Eosinophils (%)	0-5	0-5	0-3	0-1	0-5	0-5	0-10
Basophils (%)	0-1	0-1	0-1	0-1	0-1	0-1	0-2
ALT (IU/L)	26-77	20-92	-	22-128	10-25	10-35	26-91

AP (IU/L)	45-222	16-96	-	99-186	-	6-72	25-64
AST (IU/L)	54-269	-	-	28-122	-	96	16-53
Bilirubin, total (mg/dl)	0.1-0.9	0.2-0.6	0.2-0.6	0.1-0.9	0.3-0.9	0.6-1.3	0.1-0.3
Calcium (mg/dl)	3.2-8.0	5.3-13.0	3.7-6.2	5.3-12	7.8-10.5	5.6-12.1	8.3-10.8
Chloride (mEq/L)	82-114	-	-	-	98-115	108-129	-
Cholesterol (mg/dl)	26-82	40-130	90-150	55-181	20-43	50-302	-
Creatinine (mg/dl)	0.3-1.0	0.2-0.8	0.6-1.4	0.4-1.0	0.6-2.2	0.4-1.3	0.8-2.3
Glucose (mg/dl)	62-175	50-135	50-135	37-198	60-125	109-193	120-209
Phosphorus (mg/dl)	6.0-10.4	5.8-8.2	3.7-7.0	3.0-9.9	5.3	4-8	3.6-10.0
Potassium (mEq/L)	5.1-10.4	5.9	3.3-6.3	3.9-5.5	6.8-8.9	3.3-5.7	4.0-5.7
Protein, total (g/dl)	3.5-7.2	5.6-7.6	4.3-12.5	5.2-7.0	4.6-6.2	3.8-5.6	5.8-8.1
Albumin (g/dl)	2.5-4.8	3.8-4.8	1.8-5.5	3.5-4.9	2.1-3.9	2.3-4.1	2.4-3.9
Globulin (g/dl)	0.6	1.8-3.0	1.2-6.0	2.7-4.2	1.7-2.6	0.9-2.2	3.4-4.2
Sodium (mEq/L)	112-193	135-155	141-172	128-144	146-152	142-166	144-175
Triglycerides (mg/dl)	-	26-145	-	72-227	0-145	-	-
Urea nitrogen (mg/dl)	17-28	15-21	17-27	12-26	9-32	17-45	21-44

Appendix-3: Biologic and physiologic data of rodents

Species	Avg Wt (g) (male/female)	Avg at Puberty (days) (male/female)	Life Span (yr)	Temperature °C (°F)	Heart Rate (beasts/min)	Respiratory Rate (breaths/min)
Chinchilla	450-600/550-800	240-540/240-540	8-10	36.1-37.8 (97.0-100.0)	40-100	40-80
Degu	200-300	90-180	10 (record)	-	-	-
Duprasi	60-90	75-105	3	-	-	-
Gerbil	65-100/55-85	70-85/65-85	3-4	37.0-38.5 (98.6-101.3)	360	90
Guinea pig	900-1200/700-900	90-120/60-90	4-5	37.2-39.5 (99.0-103.1)	230-380	40-100
Hamster	85-130/95-150	70-100/40-70	1.5-2.0	37.0-38.0 (98.6-100.4)	250-500	35-135
Mouse	20-40/25-40	50/50-60	1.5-3.0	36.5-38.0 (97.5-100.4)	325-780	60-220
Prairie dog	1000-2200/500-1500	730-995	6-10	35.4-39.1 (95.7-102.3)	83-318	40-60
Rat	450-520/250-300	65-110	2.5-3.5	35.9-37.5 (96.6-99.5)	250-450	115

Appendix-4: Blood volumes of rodents with safe bleeding volume recommendations

Species	Blood volume (Average)	Safe Venipuncture volume
Gerbil	67 ml/kg	0.3 ml/animal
Guinea pig	75 ml/kg	7.7 ml/kg
Hamster	78 ml/kg	5.5 ml/kg
Mouse	76 ml/kg	7.7 ml/kg
Rat	64 ml/kg	5.5 ml/kg

Appendix-5: Urinalysis reference values for rodents

Measurement	Gerbil	Hamster	Mouse	Rat
Urine volume (m/l24hr)	2-4 drops	5.1-8.4	0.5-2.5	13-23
Specific gravity	-	1.060	1.034	1.022-1.050
Average pH	-	8.5	5.01	5-7
Protein (mg/dl)	-	-	Males proteinuric	< 30

Appendix-6: Reproductive data for rodents

Species	Estrus Length (days)	Gestation (days)	Litter size	Birth weight (g)	Age Eyes open (days)	Weaning age (days)
Chinchilla	30-50	105-115	2-3	30-50	Birth	36-48
Degu	-	87-93	1-10	14	2-3	28
Duprasi	-	19-22	3-6	-	-	21-28
Gerbil	4-6	24-26	4-6	2.5-3.5	16-20	20-30
Guinea pig	15-17	59-72	2-5	60-100	Birth	14-28
Hamster	4	15-18	4-12	2	14-16	20-28
Mouse	4-5	19-21	10-12	0.5-1.5	10-14	21-28

Prairie dog	14-21	30	2-10	-	-	42-49
Rat	4-5	19-23	6-12	5-6	12-17	17-21

Appendix-7: Determining the sex of mature rodents

Male	Female
- Anogenital distance is longer in the male. - Manipulate "genital papilla" (prepuce) to protrude penis. - Palpate for testicles either in a scrotal sac (if present) or subcutaneous in inguinal region. - Males have only two external opening in the inguinal area: ▪ anus ▪ urethral orifice at trip of penis In very fat males, there may be a depression between the penis and anus. This depression can be obliterated by manipulating the skin in that area.	- Anogenital distance is shorter in the female. - Look for three external openings in the inguinal area: ▪ anus (most caudal opening) ▪ vaginal orifice (middle opening, look carefully) ▪ urethral orifice at tip of urethral papilla (most cranial opening) The urethral papilla is located outside the vagina (unlike dogs and cats). In very fat females or young females, the vaginal orifice may be either hidden by folds of skin (the former) or sealed(latter).gentle manipulation of the skin in this area will divulge the orifice

Appendix-8: Nutritional data for rodents

	Consumption (per 100 g BW/day)		Nutritional Recommendations			
Species	Food (g)	Water (ml)	Minimum Fiber (%)	Carbohydrates (%)	Fat (%)	Protein (%)
Chinchilla	3-6	-	-	-	-	-
Gerbil	5-8	4-7	-	-	2-4	16-22
Guinea pig	6	10	16-18	16	-	18-30
Hamster	8-12	8-10	-	8	3-5	15-25
Mouse	12-18	15	-	45-55	5-25	16-20
Prairie dog	2.3-4.1	-	-	-	-	-
Rat	5-6	≥ 10-12	-	-	5-25	12-27

Appendix-9: Zoonotic in rodents

Species	Potential Zoonotic Disease
Chinchilla	Listeria monocytogenes
	Lymphocytic choriomeningitis (LCM); rare
	Dermatophytes (Trichophyton mentagrophytes, MIcrosporum canis, M gypseum)
	Baylisascaris procyonis
Gerbil	Salmonellosis; rare
	Hymenolepis nana; rare
Guinea pig	Allergies (cutaneous and respiratory) to dander and urinary proteins
	Bordetella, salmonellosis, Yersinia pseudotuberculosis, streptococcus, rare
	Dermatophyte (Trichophyton mentagrophytes)
	Sarcoptic mites (Trixacarus caviae, sarcoptic scabei)
Hamster	Salmonellosis, Acinetobacter
	Lymphocytic choriomeningitis (LCM); rare
	Dermatophytes(Trichophyton memtagraphytes, Microsporum spp.)
	Hymenolepis nana
Mouse	Allergies (Cutaneous and respiratory) to dander and urinary proteins
	Salmonellosis; rare
	Lymphocytic choriomeningitis (LCM); rare
Prairie dog	Clostridium piliformes, Pasteurella multocida, salmonellosis, Yersinia
	pseudotuberculosis, Ypestis, Y enterocolitica
	Hanta virus (wild caught), rabies virus (wild caught)
	Dermatophytes (Trichophyton mentagrophytes, Microsporum gypseum)
	Various ectoparasites (mites, fleas, lice)
Rat	Allergies (cutaneous and respiratory) to dander and urinary proteins
	Leptospirosis salmonellosis, cestodiasis, streptococcal infection
	Hemorrhagic fever, sylvatic plague (vector: rat fleas), St Louis encephalitis (vector:
	Liponyssus sylviarum), rat bite fever (Sterptobacillus moniliformis)

Table-1: Antimicrobial and antifungal agents used in rabbits

Agent	Dosage	Comments
Alatrofloxacin (Trowan, Pfizer)	15 mg/kg IV (single does)	Bacterial meningitis
Amikacin	2 mg/kg SC, IM, IV q8h	
	2-5 mg/kg SC, IM q8-12h	
	10 mg/kg SC, IM q8-12h	
	1.25 g/20 g Methylmethacrylate	Place in bone after surgical debridement of jaw abscess
Amphotericin B	-	Severe fungal infections; use in combination with fluconazole; potentially nephrotoxic and hepatotoxic
Desoxycholate	1 mg/kg IV q24h	
Liposomal	5 mg/kg IV q24h	Invasive aspergillosis
Cefazolin	2 g/ 20 g methylmethacrylate	Place in bone after surgical debridement of jaw abscess
Geftazidime	50 mg/kg IM, IV q3h	Publication details drug half-life, not dosing frequency
Ceftiofur (Ceftiofur, Pharmacia & Upjohn)	2 g/ 20 g methylmethacrylate	Place in bone after surgical debridement of jaw abscess
Ceftriaxone (Rocephin, Roche)	40 mg/kg IM q12h × 2 days	Bacterial infections; rabbit syphilis
Cephalexin	11-22 mg/kg PO q8h	
	15 mg/kg SC q12h	
Cephaloridine	10-25mg/kg SC, MI q24h × 5 days	
	11-15 mg/kg IM q12h	
Cephalothin	12.5 mg/kg q6h × 6 days	
	2 g / 20 g methylmethacrylate	Place in bone after surgical debridement of jaw abscess
Chloramphenicol	25 mg/kg PO q8-12h	
	30 mg/kg PO q12h	
	30 mg/kg SC, IM, IV q8-12h	
	50 mg/kg PO, SC, IM, IV q8h	
	1.3 mg/ml drinking water	Partially effective at 0.5 mg/ml in clinical trial for pasteurellosis

Chlortetracycline	50 mg/kg PO q24h	
Ciprofloxacin (Cipro,	5-20 mg/kg PO q12h	Suspension in water, stable for 14 days;
Bayer, Ciloxan,	10-20 mg/kg PO q12h	may cause arthropathies in young
Alcon)	1 drop topical q8-12h	Nasal pasteurellosis; maintains therapeutic levels in tear film for at least 6 hr after application (tears drain into nasal sinus)
	2 drops topical q1h for 7-14 hr	Ocular penetration injuries, good penetration into aqueous and vitreous humor
Clotrimazole (Lotrimin, Schering)	Topical	Localized dermatophytosis
Doxycycline	2.5 mg/kg PO q12h	
	4 mg/kg PO q24h	
Enrofloxacin (Baytril, Bayer)	-	May cause arthropathies in young; limit SC and IM injections (may cause muscle necrosis or sterile abscesses)
	5 mg/kg PO, SC, IM, IV q12h	PD; Clinical trial for pasteurellosis, × 14 days
	5-10 mg/kg PO, SC, IM q12h	Licensed for use in rabbits in some countries
	5-20 mg/kg PO, IM, q12h	14-30 days for pasteurellosis
	100 mg/L drinking water	Clinical trial for pasteurellosis; successful when intake > 5 mg/kg q24h
	200 mg/L drinking water	Clinical trial for pasteurellosis, × 14 dyas
Fluconazole	25-43 mg/kg IV (slow) q12h	Systemic fungal disease
Furazolidone	5 mg/kg PO q24h × 14 days 5.5 g/L drinking water	
	50 mg/kg feed	
Fusidic ointment (Fuciderm, Leo)	Topical to skin q12-24h	Superficial pyoderma
Gentamicin	1.5-2.5 mg/kg SC, IM, IV q8h	Seldom indicated; use with caution
	2.5 mg/kg SC, IM, IV q8-12h	
	4 mg/kg SC, IM q24h	
	1 g/20 g methylmethacrylate	Place in bone after surgical debridement of jaw abscess
Griseofulvin	12.5 mg/kg PO q12h × 30-45 days	Advanced cases of dermatophytosis; decrease dose by 50% with ultramicrosize
	25 mg/kg PO q24h × 30-45 days	

		form (Gris-PEG, Allergan Herbert), which has better absorption
Ketoconazole	10-40 mg/kg PO q24h × 14 days	Dermatophytosis
Lime sulfur (2%-3%)	Topical q5-7d × 4 wk	Dermatophytosis; use with caution
Metronidazole	20 mg/kg PO q12h	
	40 mg/kg PO q24h × 3 days	
Micafungin	0.25-2.0 mg/kg IV q4h	Systemic candidiasis
Miconazole (Conofite, Schering-Plough)	Topical q24h × 14-28 days	Localized ermatophytosis
Moxifloxacin	40 mg/kg IV q12-24h (suggested frequency)	Bacterial meningitis
Noemycin	30 mg/kg PO q12h	
	200-800 mg/L drinking water	
Netilmicin (Netromycin, Schering)	6-8 mg/kg SC, IM, IV q24h	Dilute and give over 20 min for IV use; gram-negative infections
Nitrofurazone	8-11 mg/kg PO q12h	
Ofloxacin (Ocuflox, Allergan)	20 mg/kg SC q8h	Urogenital, skin, respiratory infections
Oxytetracycline	15 mg/kg IM q8h	PD; anorexia and diarrhea at 30 mg/kg IM q8h; tissue irritation can occur
	25 mg/kg SC q24h	
	50 mg/kg PO q12h	
	1 mg/ml drinking water	
Penicillin	40,000-60,000 IU/kg IM q12h × 5-7 days	Rabbit syphilis
Penicillin G, benzathine	42,000-60,000 IU/kg IM q48h	
	42,000-84,000 IU/kg SC q7d × 3 wk	Rabbit syphilis
Penicillin G, procaine	40,000 IU/kg IM q24h × 5-7 days	Rabbit syphilis
Penicillin G, Procaine (cont'd)	42,000-84,000 IU/kg SC, IM q24h	PD
	60,000 IU/kg IM q8h	PD
Rifampin (R) / azithromycin (A)	(R) 40 mg/kg PO q12h + (A) 50 mg/kg PO q24h	Staphylococcus osteomyelitis
Rifampin (R)/ clarithromycin (C)	(R) 40 mg/kg + (C) 80 mg/kg PO q12h	Staphylococcus osteomyelitis
Silver sulfadiazine	Topical q24h	Does not cause diarrhea if ingested

cream (Silvadene cream, Marion)		
Sulfadimethoxine	10-15 mg/kg PO q12h	
Sulfamethazine	1 mg/ml drinking water	
	5-10 g/kg feed	
Sulfaquinoxaline	1 mg/ml drinking water	
	0.6 g/kg feed	
Tetracycline	50 mg/kg PO q8-12 h	
	50-100 mg/kg PO q8h	
	250-1000 mg/L drinking water	Therapeutic levels not achieved even at 800-1600 mg/ L; 250 mg/L not effective in clinical trial for pasteurellosis
Thiamphenicol	30 mg/kg PO, IM, IV q6h	Derivative of chloramphenicol; reference describes pharmacokinetics of single dose; not available in the United States
Tilmicosin (Micotil, Elanco)	25 mg/kg SC once	Pasteurellosis; use cautiously: at least one rabbit death and several human deaths have been reported[7]; has been associated with anemia and leucopenia
Tobramycin (Nebcin, Lilly)	1 g/ 20g methylmethacrylate	Place in bone after surgical debridement of jaw abscess
	10% in calcium sulfate pellets	Biodegradable implants for treatment of osteomyelitis
Trimethoprim/ sulfa	15 mg/kg PO q12h	
	30 mg/kg PO, SC,IM q12h	May cause tissue necrosis SC; do not use SC
	30 mg/kg SC q24h	May cause tissue necrosis
	48 mg/kg SC q12h	May cause tissue necrosis
Tylosin (Tylan, Elanco)	10 mg/kg PO, SC, IM q12h	
	10 mg/kg PO, SC, IM q24h	
Vancomycin	10 mg vancomycin and 50 mg copolymer 50: 50 poly (DL- lactide) / co-glycolide, moulded into 8 mm beads and compressed at 55^{o}C	Osteomyelitis, effective locally for 56 days

Table-2: Antiparasitic used in rabbits

Agent	Dosage	Comments
Allbendazole	7.5-20 mg/kg PO q24h × 3-14 days	Potential treatment for encephalitozoonosis
Amprolium (9.6%)	0.5 ml/pint drinking water × 10 days	Coccidiosis
	5 ml./gal drinking water × 21 days	
Carbaryl powder (5%)	Topical q7d	Ectoparasites; use sparingly
	Topical, apply weekly	
Decoquinate (Deccox, Rhone-Poulenc)	62.5 ppm in feed	Coccidiosis
Diclazuril	1 ppm in feed	Coccidiosis
Dimetridazole	0.2 mg/ml drinking water	Not available in the united States
Fenbendazole	5 mg/kg PO	
	10 mg/kg PO, repeat in 14days prn	
	20 mg/kg PO q24h for 7 days before and 2 days after mixing rabbits	Preventative against encephalitozoonosis
	20 mg/kg PO q24h × 28 days	Treatment for encephalitozoonosis; failed to clear all parasites
	50 ppm in feed × 2-6 wk	
Fipronil (Frontline, Merial)	Contraindicated	May cause neurologic disease and death
Imidacloprid (Advantage, Bayer)	Use cat dose; place in 2-3 areas along dorsum q30d	Flea adulticide
	10-16 mg/kg (single 0.4 ml dose, 10% solution) as a single topical application	Flea adulticide
Ivermectin	-	Ectoparasites
	0.1-0.2 mg/kg SC, repeat in 14 days	Ear mites, clinical trial
	0.2-0.4 mg/kg SC q10-14d	
	0.4 mg/kg PO, SC q7-14d	
	0.4 mg/kg SC q7d × 2-3 wk	
	0.6 mg/kg SC q14d	
Lasalocid	120 ppm in feed	Coccidiosis
Lime sulfur (2%-3%)	1-2 dips / wk × 28 days	Ectoparasites; young animals
	Dip q7d × 4-6 wk	
Lufenuron	30 mg/kg PO q30d	Flea larvicide

(Program,Novartis)		
Monensin (CoBan 60, Elanco)	0.002%-0.004% in feed	Coccidiosis
Moxidectin	0.2 mg/kg PO, repeat in 10 days	Psoroptic mange; small animal formulation is not currently available in the United States
Piperazine	200 mg/kg PO, repeat in 14-21 days	Use with citrate formulation
	500 mg/kg PO × 2 dasy	Adults / use with adipate formulation
	750 mg/kg PO × 2 days	Young
	2-5 mg/ml drinking water × 7days	
Praziquantel (Droncit, Bayer)	5-10 mg/kg PO, SC, IM, repeat in 10 days	
Pyrantel pamoate	5-10 mg/kg PO, SC, IM, repeat in 10 days	
	5-10 m/kg PO, repeat in 14-21 days	
Pyrethrins	Topically as directed for puppies / kittens q7d	Flea control
Rofenaid (Rofenaid 40, Roche)	62.5-250 ppm in feed	Coccidiosis
Selamectin (Revolution, Pfizer)	6-10 mg/kg topically	Ectoparasites (e.g., ear mites, fleas)
Sulfadimethoxine	50 mg/kg PO once, then 25 mg/kg q24h × 10-20 days	Coccidiosis
Sulfadimidene	100-233 mg/L drinking water	Coccidiosis
Sulfamerazine	100 mg/kg PO	Coccidiosis
	0.05%-0.15% in drinking water	Coccidiosis
Sulfamethazine	100 mg/kg PO q24h	Coccidiosis
	0.77 g/L drinking water	
	0.5%-1.0% in feed	
Sulfamethoxine	50 mg/kg PO on day 1, then 25 mg/kg PO q24h × 10-20 days	Coccidiosis; administer in evening (not morning) because of circadian variation in drug excretion and half-life
Sulfaquinoxaline	0.02%-0.05% in drinking water	Coccidiosis / prevention
	0.025%-0.1% in drinking water	Alternating 2 wk periods for 4-8 wk during weaning
	0.04%-0.1% in drinking water	Coccidiosis
	0.1%-0.15% in drinking water	Coccidiosis / treatment
	1 mg/ml in drinking water	

	0.025%-0.03% in feed × 4-6 wk	During weaning
	125-250 ppm in feed	
Thiabendazole	25-50 mg/kg PO	
	50-100 mg/kg PO q24h ×5 days	
	0.1% in feed × 3 mo	
Thiabendazole / dexamethasone / neomycin (Tresaderm, MSD-AgVet)	3 drops in each ear q12h × 7-14 days	Ear mites; generally concurrent to ivermectin therapy
Toltrazuril	25 ppm in drinking water (or 25 mg/kg PO) q24h × 2 days, repeat after 5 days	

Table-3: Chemical restraint/anesthetic/analgesic agents used in rabbits

Agent	Dosage	Comments
Acepromazine	-	See ketamine, ketamine / xylazine for combinations
	0.25-1.0 mg/kg IM	Preanesthetic; sedative; tranquilizer
	1-5 mg/kg SC, IM	Preanesthetic; lower end of dose range is preferred
Acetaminophen (Tylenol, McNeil)	-	Acetaminophen combination follows
	200-500 mg/kg PO	Analgesia
	1-2 mg/ml drinking water	
Acetaminophen /codeine	1 ml elixir / 100 ml drinking water	Analgesia; nonsteroidal anti-inflammatory
Acetylsalicylic acid (aspirin)	10-100 mg/kg PO q8-12h	Nonsteroidal anti-inflammatory
	100 mg/kg POq8-24h	
	100 mg/kg PO q48h	
Alfentanil (Alfenta, Taylor)	0.03-0.07 mg/kg IV	Intraoperative analgesia for 45 min duration
Atipamezole (Antisedan, Pfizer)	0.001 mg/kg SC,IV, IP	Medetomidine reversal
	Give same volume SC, IV, IP as medetomidine (5 × medetomidine dose in mg)	

Atracurium	0.1 mg/kg IV	Paralysis for intraophthalmic surgery; requires assisted ventilation
Atropine	0.1-0.5 mg/kg SC, IM	Many rabbits possess serum atropinase, hence very high doses are often administered
	0.1-3.0 mg/kg SC	
	0.8-1.0 mg/kg IM	
Buprenorphine (Buprenex, Reckitt & Colman)	0.01-0.05 mg/kg SC, IP, IV q6-12h	Analgesia
	0.02-0.1 mg/kg SC,IV	
	0.5 mg/kg per rectum q12h	
Butorphanol	-	See ketamine / xylazine for combination
(Torbugesic, Fort Dodge)	0.1-0.5 mg/kg SC, IM, IV q4h	Analgesia
Butorphanol	0.1-1.0 mg/kg SC, IM, IV q4-6h	
(Torbugesic, Fort Dodge) (cont'd)	1-5 mg/kg SC q4-6h	Lower dose preferred
Carprofen (Rimadyl, Pfizer)	-	Nonsteroidal anti-inflammatory; chronic joint pain
	1.0-2.2 mg/kg PO q12h	
	1.5 mg/kg PO q12h	
	2.2 mg/kg Po q12h	
	2-4 mg/kg SC q24h	
	4 mg/kg SC, IM q24h	
Chlorpromazine	1-10 mg/kg IM, IV	Preanesthetic; lower end of dose range is generally preferred
Codeine	-	See acetaminophen combination
Diazepam	-	See ketamine for combinations
	1-3 mg/kg IM	Preanesthetic; tranquilizer
	1-5 mg/kg IM, IV	Preanesthetic; tranquilizer
	1 mg/kg intracavernous	Seizures; alternative to IV route
Enflurane	To effect	Anesthesia; MAC = 2.9%[25]
Fentanyl	0.0074 mg/kg IV	Analgesia
Entanyl patch	1/2 patch / medium-sized rabbit (3 kg) × 3 days	Postoperative analgesia; do not cut patch
Fentanyl/ droperidol (Innovar-Vet, Schering – Plough)	0.15-0.44 ml/kg IM	0.22 ml/kg optimal; may cause muscle necrosis at injection site

Fentanyl / fluanisone (Hypnorm, Janssen)	0.2-0.3 ml/kg	Premedication, analgesia, sedation
Flunixin meglumine (Banamine, Schering)	-	Analgesia; nonsteroidal anti inflammatory
	0.3-2.0 mg/kg PO, IM, IV q12-24h	Use for no more than 3 days
	1.1 mg/kg SC, IM q12h	
	1.2 mg/kg SC q12-24h	
Glycopyrrolate (Robinul-V, Fort Dodge)	0.01-0.02 mg/kg SC	Preanesthetic
Ibuprofen	-	Analgesia; nonsteroidal anti-inflammatory; may have gastrointestinal side effects
	2.0-7.5 mg/kg PO q4h	
	7.5 mg/kg q6-8h PO	
Isoflurane	3%-5% induction, 1.5%-1.75% maintenance	Inhalant anesthetic of choice; MAC=2.05%
	3%-5% induction, 2%-3% maintenance	
Ketamine	-	Ketamine combinations follow; should be administered in combination with other agents
	15-20 mg/kg IV	
	20-50 mg/kg IM	60 min of sedation
	35-50 mg/kg IM	
Ketamine (K) / acepromazine (A)	(K) 25-40 mg/kg + (A) 0.25-1.0 mg/kg IM, IV	Anesthesia
	(K) 40 mg/kg + (A) 0.5-1.0 mg/kgIM	Anesthesia
Ketamine (K)/ diazepam (D)	(K) 10 mg/kg + (D) 0.5 mg/kg IV	Anesthesia; follow with isoflurane
	(D) 0.2-0.5 mg/kg IV, then (K) 10-15 mg/kg IV to effect	Sedation; use with isoflurane for anesthesia
	(K) 15 mg/kg + (D) 0.3 mg/ kg IM	Anesthesia; follow with isoflurane
	(K) 20-30 mg/kg IM< then (D) 0.5 mg/kg IV at 5-10 min	Anesthesia; generally used with isoflurane: dentistries (with or without

		isoflurane)
	(K) 20-30 mg/kg + (D) 1-3 mg/kg IM	Anesthesia; use with isoflurane
	(K) 20-40 mg/kg + (D) 1-5 mg/kg IM	
	(K) 30-40 mg/kg + (D)2-5 mg/kg IM	Surgical anesthesia; lower end of dose range for (D) is preferred; less preferable than the forementioned (K) / (D) combinations
Ketamine (K) / medetomidine (M)	(M) 0.1 mg/kg IV, then (K) 20 mg/kg IV at 15 min (M) 0.35 mg/kg IV, then (K) 5-20 mg/kg IV at 15 min	Anesthesia sufficient for cerebrospinal fluid spinal tap and cardiocentesis Note: high medetomidine dose
Ketamine (K) / midazolam (M)	(K) 25 mg/kg + (M) 2-5 mg/kg IM	May be preferable to use (M) at < 2 mg/kg
Ketamine (K) / xylazine (X)	-	Aneshesia; may result in bradycardia; less preferable than (K) / (D) / isoflurane combinations; seldom indicated
	(K) 10 mg/kg + (X) 3 mg/kg IV	
	(K) 30-40 mg/kg + (X) 3- mg/kg IM	
	(K) 32 mg/kg + (X) 5 mg/kg IM	
Ketamine (K) / xylazine (X) / acepromazine (A)	(K) 35 mg/kg + (X) 5 mg/kg + (A) 0.75 mg/kg IM	Aneshesia; may result in bradycardia; less preferable than (K) / (D) / isoflurane combinations; seldom indicated
Ketoprofen (Ketofen, Fort Dodge)	1 mg/kg IM q12-24h 3 mg/kg SC, IM q24h	Musculoskeletal pain; nonsteroidal anti-inflammatory
Ketoprofen (2.5%) topical gel (Menarini, France)	Apply topically q6-12h	Musculoskeletal pain
Lidocaine 1.5%	0.4 ml/kg epidural	Epidural anesthesia
Lidocaine 10%	Topical to glottis	Facilitates intubation

Medetomidine (Dormitor, Pfizer)	-	Medetomidine combinations follow; see ketamine for combinations
	0.25 mg/kg IM	Sedation
Medetomidine (M) / ketamine (K)	(M) 0.35 mg/kg IM + (K)5 mg/kg IV	Anesthesia; surgical depth approximately 19 min; note: high medetomidine dose
	(M) 0.35 mg/kg IM, then (K) 5-20 mg/kg IV at 15 min	Note: high medetomidine dose
Medetomidine (M) / propofol (P)	(M) 0.35 mg/kg IM + (P) 3 mg/kg IV	Anesthesia; surgical depth approximately 11 min; note: high medetomidine dose
Meloxicam (Metacam, Boehringer Ingelheim Vetmedica)	0.1-0.2 mg/kg PO q24h	Nonsteroidal anti-inflammatory; analgesia; antipyretic; used for osteoarthritis and postoperative pain; palatable PO form
	0.2 mg/kg SC, IM q24h	
	0.3 mg/kg PO q24h	
Meperidine (Demerol, Winthrop – Breon)	5-10 mg/kg SC, IP q2-3h	Analgesia
	10 mg/kg SC, IM q2-3h	Analgesia
	5-25 mg/kg SC, IM, IV	
	0.2 mg/ml drinking water	
Methoxyflurane	1%-3% induction, 0.3%-1.0% maintenance	
	2%-4% induction, 0.5%-2.0% maintenance	
Midazolam (Versed, Roche)	-	See ketamine for combination; more potent, shorter action than diazepam; rapidly absorbed IM; decrease uptake and increases elimination of procianamide
	1-2 mg/kg IM, IV, IP	Preanesthetic; tranquilizer
Morphine	1.2-5.0 mg/kg SC, IM q2-4h	Analgesia
	2-5 mg/kg SC, IM q2-4h	
	5-10 mg/kg SC, IM q4h	
Nalbuphine (NUmbain, Dupont)	1-2 mg/kg IM, IV q4-5h	Analgesia
Nalorphine (Nalline Hydrochloride, Rhone Merieux)	1-5 mg/kg IV	Narcotic reversal

Naloxone	0.01-0.1 mg/kg IM, IV	Narcotic reversal
Oxymorphone	0.05-0.2 mg/kg SC, IM q8-12h	Analgesia
	0.2 mg/kg IM q2-4 h	
Pentazocine (Talwin-V, Upjohn)	5-10 mg/kg IM, IV q2-4h	Analgesia
Pentobarbital	20-40 mg/kg IV, IP	Marginal analgesia; autonomic depression; not recommended
Piroxicam (Feldene, Pfizer)	0.2 mg/kg PO q8h	Analgesia; nonsteroidal antiinflammatory
Promazine	1-2 mg/kg IM, IV	Preanesthetic
Propofol	-	See medetomidine for combinations
	2-3 mg/kg IV	Induction after premedication; maintain with approximately 1 mg/kg IV q15min
	3-6 mg/kg IV	
	7.5-15.0 mg/kg IV	
Sevoflurane	To effect	Anesthesia; MAC = 3.7%
Thiamylal	15-25 mg/kg IV to effect	
Thiopental	15-30 mg/kg IV to effect	
Tiletamine / zolazepam (Telazol, Fort Dodge)	3 mg/kg IM	Sedation before gas anesthetic; caution: tiletamine causes severe renal tubular necrosis at 32 mg/kg and mild nephrosis at 7.5 mg/kg; caution: not generally recommended for use in rabbits
Xylazine	-	See ketamine for combinations
	1-5 mg/kg SC, IM	Preanesthetic; tranquilizer; lower end of dose preferred; seldom indicated
Yohimbine (Yobine, Lloyd)	0.2-1.0 mg/kg IM, IV	Xylazine reversal

Table-4: Ophthalmic drugs used in rabbits

Agent	Dosage	Comments
Atropine (1%)	Topical to eyes q12h prn	Mydriasis; systemic effects are possible
Atropine (1%) / phenylephrine (10%)	Topical to eyes	Mydriasis for nonalbino eyes
Betaxolol (0.5%) (Betoptic, Alcon)	Topical to eyes q12h	Glaucoma; effectively decrease intraocular pressure in rabbits
Ciprofloxacin (0.3%) (Ciloxan, Alcon)	Topical to eyes q8-12h	Susceptible infections
Cyanoacrylate adhesive (Vetbond, 3M)	Topical to corneal ulcer	Treatment of corneal ulcers, causes minimal inflammation
Cyclosporin A (0.2%) ointment (Optimmune, Schering-Plough)	Topical to eyes q12h	Shown to increase tear production in rabbits
Dichlorophenamide (Daranide, Merck)	1-2 mg/kg PO q24h	Glaucoma
Dorzolamide (Trusopt, Merck)	Topical to eyes q8-12	Glaucoma
Fusidic acid (Fucithalmic, Leo)	Topical to eyes q12-24h	Bacterial conjunctivitis
Gentamicin (Tiacil, Virbac)	Topical to eyes q8h	Bacterial conjunctivitis
Gestonorona (Primostat, Mexican Schering) (0.5 mg in 0.05 ml acidified water)	Intravitreal injection	Matrix metalloprotease inhibitor; single injection lasts for 4 wk; not available in the United States
Granulocyte macrophage colony stimulating factor (rhu GM-CSF)	Topical to eyes, 1 drop q6h	Superficial corneal wounds; use 4.8% solution (16 µg rhu GM-CSF in 33 µl saline buffered to pH 7.4)
Metipranol (0.1%) / pilocarpine (2%)	Topical to eyes q8-12h	Glaucoma
Neomycin-bacitracin-polymyxin B	Topical to eyes q6h	Susceptible infections; corneal ulceration

Phenylephrine (10%)	- Topical to eyes	See atropine for combination Mydriasis
Prednisolone acetate (1%) ophthalmic solution	Topical to eyes q6-12h	Inflammation of eyes; rabbits are a corticosteroid-sensitive species; if used, use with extreme caution
Tomolol (0.5%) (Timoptic, Merck)	Topical to eyes q12h	Glaucoma
Tissue plasminogen activator	25 µg intraocular injection	Intraocular fibrin
Tropicamide (1%)	Topical to eyes	Mydriasis

Table-5: Miscellaneous agents used in rabbits

Agent	Dosage	Comments
Activated charcoal (1 g/5 ml water)	1 g/kg PO q4-6h	Shown to reduce intestinal absorption of isoniazid and may be helpful in other cases of oral intoxication
Aluminum hydroxide	30-60 mg/kg PO q8-12h	Phosphorus binder; hyperphosphatemia caused by renal failure
Barium	10-14 ml/kg PO	Gastrointestinal contrast studies
Bromelin enzyme	-	Efficacy has not been determined; generally not included in most trichobezoar treatment strategies
	1-2 tablets / animal PO q24h × 3-5 days	Trichobezoars, gastric stasis; in fresh pineapple juice
	1-2 tablets / animal PO q24h × 2-3 days	Preventative for heavy hair shedders; use very few months
Bupranolol with dlimonene	Apply topically q24h	Experimental formulation, dlimonene may be useful to increase transdermal uptake of other topical drugs; not available in the United States
Calcium EDTA (edentate calcium disodium) (Calcium Disodium Versenate, 3M)	13-27 mg/kg SC, IV 27 mg/kg SC q6-12h prn	Chelation therapy Lead toxicosis; diluted to <10 mg/ml with0.45% NaCl 1/2.5% dextrose

Cellulose powder (Unifiber, Niche)	1/2-1 tsp/ feeding	Nonsoluble fiber source for rabbits on liquid enteral diets; will pass through small-diameter feeding tubes
Chlorphenamine maleate	0.2-0.4 mg/kg PO q12h	Antihistamine
Cholestyramine (Questran Light, Squibb)	2 /g/ animal PO q24h × 18-21days	Ion exchange resin for toxin absorption after inqppropriate antibiotic administration; use for treating enterotoxemia; gavage with20 ml water; may resulting constipation
Chondroitin sulfate (Cosequin, Nutramax)	Used empirically at feline dose	Arthritis;a neutraceutical
Cimetidine (Tagamet, Smith Kline Beecham)	5-10 mg/kg q6-12h	Gastric and duodenal ulcers
Cisapride (Propulside, Janssen)	0.5 mg/kg PO q8-1h[44]	Enhances gastrointestinal motility; used for gastrointestinal stasis; not commercially available in the United States
Cyclizine	8 mg/rabbit PO q12h	Torticollis (used to treat labyrinthine disorders in humans)
Dexamethasone	-	Corticosteroids are seldom indicated in rabbits; rabbits are a corticosteroid-sensitive species; if used, use with extreme caution and concurrent to a gastric protectant
	0.2-0.6 mg/kg SC, IM, IV	Anti inflammatory
	0.5-2.0 mg/kg PO, SC, then decreasing dose q12h × 3-14 days	
	2 mg/kg IM, IV	Shock; effectiveness is controversial
Digoxin	0.005-0.01 mg/kg PO q24-48h	Congestive heart failure; atrial fibrillation
Diphenhydramine (Benadryl, Parke-Davis)	2 mg/kg PO, SC q8-12h	Torticollis (used to treat labyrinthine disorders in humans)
Doxapram	2-5 mg/kg SC, IV q15min	Respiratory stimulant
Epinephrine	0.2 mg/kg IV	Cardiac arrest
	0.2-0.4 mg/kg IT	Cardiac arrest
Epoetin alpha,	50-150 IU/kg SC q2-3d	Biosynthetic form of erythropoietin;

recombinant (Epogen, Amgen)		treatment of anemia; use until PCV is normal, then q7d for at least 4 wk
Fecal transfaunation	Mix fresh cecotrophs with warm saline, strain through gauze, and administer by gavage	Dybiosis; placement of E-collar on donor facilitates collection of sample
Ferrous sulfate	4-6 mg/kg PO q24h	Iron deficiency anemia
Furosemide	-	Diuretic
	0.3-2.0 mg/kg SC, IM, IV[35]	
	1-4 mg/kg IM q4-6h	
	2-5 mg/kg PO, SC, IM, IV q12h	
	5-10 mg/kg q12h[2]	
Fusafungine (Locabiotal, Servier)	Spray in nares q12h × 10 days	Bacterial rhinosinusitis; not available in the United States
Hairball laxative, feline	-	Efficacy in treating trichobezoars has not been determined; generally not included in most trichobezoar treatment strategies
	1-2 ml/animal PO q24h × 3-5 days	Trichobezoars, gastric stasis
Hetastarch (Hespan, DuPont)	20 ml/kg IV	Volume expansion in hypoproteinemic patients; may be of benefit in endotoxemia
Human chorionic gonadotropin (hCG)	20-25 IU/animal IV	Ovulation
Hydroxyzine (Atarax, Roering)	2 mg/kg PO q8-12h	Antihistamine; antipuritic
Iron dextran	4-6 mg/kg IM once	Iron deficiency anemia (treatment or prevention)
Lactated Ringer's solution	60-90 ml/kg	Treatment for shock
Lactobacilli	-	May aid in treatment of enteritis; efficacy not determined
	Administer PO during antibiotic treatment period, then 5-7 days beyond cessation	Give 2 hr before or 2 hr after antibiotic treatment
Lidocaine	1-2 mg/kg IV (bolus)	Cardiac arrhythmia
	2-4 mg/kg IT	Cardiac arrhythmia
Loperamide (Imodium A-D, McNeil)	0.1 mg/kg PO q8h × 3 days, then q24h × 2 days	Enteropathies (nonspecific diarrhea); give in 1 ml water
Meclizine(Antivert, Roering)	2-12 mg/kg PO q24h	Reduces disorientation and rolling with torticollis (prevents motion sickness in

		small animals)
	12.5-25mg/kg PO q8-12h	
Metoclopramide (Reglan, Robins)	0.2-0.5 mg/kg PO, SC q6-8h	Stimulates gastrointestinal motility; gastric stasis, trichobezoars
	0.2-1.0 mg/kg PO, SC q6-8h	
	0.5 mg/kg PO, SC q4-12h	
Oxytocin	0.1-3.0 U/kg SC, IM	Use in delayed, but unobstructed, parturition; agalactia
Nandrolone (Deca-Durabolin, Organon)	2 mg/kg SC, IM	Anabolic steroid; appetite stimulant; adjunct to treatment for anemia, especially in chronic renal failure
Papain enzyme	-	Efficacy has not been determined; not generally recommended as part of a trichobezoar treatment or prevention strategy
	1-2 tablets / animal PO q24h × 3-5 days	Trichobezoars, gastric stasis
	1-2 tablets / animal PO q24h × 2-3 days	Preventive for heavy hair shedders; use every few months
Pineapple juice (fresh)	-	See bromelin enzyme for comments
	10 ml/medium – size animal PO q24h × 3-5 days	Trichobezoars, gastric stasis; must use fresh juice, not canned; repeat in 3-5 days if no resolution
	10 ml/medium – size animal PO q24h × 2-3 days	Preventative for heavy hair shedders; use every few months
Polysulfated glycosaminoglycan (Adequan, Luitpold)	2.2 mg/kg SC, IM q3d × 21-28 days, then q14d	Noninfectious, traumatic, or degenerative joint disease
Potassium citrate	33 mg/kg q8h	Urinary calculi; may decrease calcium-based stone formation
Prednisolone	-	See dexamethasone for comments
	0.25-0.5 mg/kg PO q12h × 3 days, then q24h × 3days, then q48h	Treatment of nonresponsive torticollis, when negative for pasteurellosis; give antibiotics concurrently
	0.5-2.0 mg/kg Po q12h	
Prednisone	-	See dexamethasone for comments
	0.5-2.0 mg/kg PO	Anti inflammatory
Prochloperazine	0.2-0.5 mg/kg PO q8h	Torticollis; doses as high of 30 mg/kg q8h

(Compazine, Smith Kline Beecham)		are use to treat labyrinthine (antivertigo) disorders in humans
Ranitidine (Zantac, Glaxo Wellcome)	2 mg/kg IV q24h	Gastric ulceration (often in inappetant rabbits)
	2-5 mg/kg PO q12h	
Simethicone (Mylanta, Johnson & Johnson)	65-130 mg/animal q1h × 2-3 treatments	May reduce abdominal discomfort associated with excess gas
Sodium bicarbonate	2 mEq / kg IV, IP	Ketoacidosis (pregnancy toxemia); dosage is approximate
Stanozolol (Winstrol-V, Upjohn)	1-2 mg PO once	Stimulates appetite after surgery or illness
Sucralfate (Carafate, Hoechst Marion Roussel)	25 mg/kg PO q8-12h	Gastrointestinal ulcers; may interfere with other orally administered drugs
Sulfasalazine (Azulfidine, pharmacia)	1/8-1/4 crushed 500 mg tablet / animal q8-24h	May reduce inflammation of intestinal mucosa
Verapamil (Isoptin, Knoll)	0.2 mg/kg SC q8h × 9 treatments	Slow-channel calcium blocking agent; post-operatively to decrease adhesion formation
	2.5-25 μg/kg/hr IP	
Viokase-V (Fort Dodge)	-	See pineapple juice
	2-3 ml PO q12h	Enzymes; trichobezoars, gastric stasis; 1 tsp added to carrier; no direct effect on hair but may be efficacious in digesting the matrix of the trichobezoar
Vitamin C (ascorbic acid)	100 mg/kg PO q12h	Nutritional supplement
Vitamin K	1-10 mg/kg IM prn	Select bleeding disorders and toxicities

Appendix-1: Hematologic and serum biochemical values of rabbits

Measurement	Normal Values
HEMATOLOGY	
PCV (%)	30-50
Hb (g/dl)	8.0-17.5
RBC (10 µl)	4-8
MCV (fl)	58.0-66.5
MCH (pg)	17.5-23.5
MCHC (g/dl)	29-37
Platelets (10 / µl)	290-650
WBC (10 / µl)	5-12
Neutrophils (%)	35-55
Lymphocytes (%)	25-50
Monocytes (%)	2-10
Eosinophils (%)	0-5
Basophils (%)	2-7
CHEMISTRIES	
AP (IU/L)	4-16
ALT (IU/L)	14-80
AST (IU/L)	14-113
Bicarbonate (mEq/L)	16.2-31.8
Bilirubin, total (mg/dl)	0-0.75
Calcium (mg/dl)	8-14
Chloride (mEq/L)	92-112
Cholesterol (mg/dl)	35-60
Creatinine (mg/dl)	0.8-2.5
Glucose (mg/dl)	75-150
LDH (IU/L)	34-129
Lipids, total (mg/dl)	280-350
Phosphorus (mg/dl)	2.3-6.9
Potassium (mEq/L)	3.7-6.8
Protein, total (g/dl)	5.4-7.5
Albumin (g/dl)	2.5-4.5
Globulin (g/dl)	1.9-3.5
Sodium (mEq/L)	138-155
Triglycerides (mg/dl)	124-156
Urea nitrogen (mg/dl)	15-30

Appendix-2: Biologic and physiologic data of rabbits

Parameter	Normal values
Adult body weight, male (buck)	2-5 kg
Adult body weight, female (doe)	2-6 kg
Birth weight	30-80 g
Respiratory rate	30-6 breaths / min
Tidal volume	4-6 ml/kg
Heart rate	130-325 beasts / min
Rectal temperature	38.5°C – 40.0°C (101.3° – 104.0°F)
Life span	5-6 yr (up to 15 yr)
Food consumption	5 g /100g / day
Water consumption	5-10 ml/100g / day
Gastrointestinal transit time	4-5 hr
Breeding onset, male	6-10 mo
Breeding onset, female	409 mo
Breeding life of female	4 mo to3.75 yr
Reproductive cycle	Induced ovulation
Gestation period	29-35 days
Litter size	4-10
Weaning age	4-6 wk

Appendix-3: Urinalysis values in rabbits

Measurement	Normal values
Urine volume	
Large breeds	20-350 ml/ kg /day
Average breeds	130 ml/ kg / day
Specific gravity	1.003-1.036
Average pH	8.2
Crystals	Ammonium magnesium phosphate, calcium carbonate monohydrate, anhydrous calcium carbonate
Casts, epithelial cells, or bacteria	Absent to rare
Leukocytes or erythrocytes	Occasional
Albumin	Occasional in young rabbits

Appendix-4: Cerebrospinal fluid values in rabbits

Measurement	Normal values
Glucose	75 mg/dl
Urea nitrogen	20 mg/dl
Creatinine	17 mg/dl
Cholesterol	33 mg/dl
Total protein	59 mg/dl
Alkaline phosphatase	5.0 U/dl
Carbon dioxide	41.2-48.5 ml%
Sodium	149 mEq/L
Potassium	3 mEq/L
Chloride	127 mEq/L
Calcium	5.4 mEq/L
Magnesium	2.2 mEq/L
Phosphate	2.3 mEq/L
Lactic acid	1.4-4.0 mg/dl
Nonprotein N	5.6-16.8 mg/dl

Appendix-5: Electrocardiographic values in rabbits

ECG Parameter	Normal values
Heart rate	198-330 beats / min[a]
Measurements (lead II)	
P wave	
Duration (width)	0.01-0.05 sec
Amplitude (height)	0.04-0.12 mv
P-R interval	
Duration	0.04-0.08 sec
QRS complex	
Duration	0.02-0.06 sec
R-wave amplitude	0.03-0.039 mv
Q-T interval	
Duration	0.08-0.16 sec
T wave	
Amplitude	0.05-0.17 mv
Electrical axis (frontal plane)	-43 to +80 degrees

Appendix -6: Determining the sex of mature rabbits

Male	Female
Protrude penis by manipulating skin of prepuce	There is a common orifice for both the vagina and urethra (like dogs and cats)
Palpate for testicles	No structure like a "penis" can be protruded from the urogenital orifice.
Anogenital distance is longer	Anogenital distance is shorter

Appendix-7: Drugs reported to be toxic in rabbits

Drug	Comments
Amoxicillin	Enteritis; enterotoxemia
Amoxicillin / clavulanic acid	Enteritis; enterotoxemia
Ampicillin	Enteritis; enterotoxemia, high risk especially if given orally
Cephalosporins	Enteritis; enterotoxemia if given orally
Clindamycin	Enteritis; enterotoxemia high risk
Erythromycin	Enteritis; enterotoxemia
Lincomycin	Enteritis; enterotoxemia, high risk
Penicillin	Enteritis; enterotoxemia if given orally
Procaine	May be fatal at doses of 0.4 mg/kg
Tiletamine	Nephrotoxic

Appendix-8: Medical treatment for gastric stasis/ileus and trichobezoars in rabbits

Treatment	Comments
Analgesics (see Table 54)	- Use for abdominal discomfort, thereby stimulating appetite
Antibiotics (see Table 52)	- Use only when indicated; enrofloxacin or trimethoprim / sulfa are generally the drugs of choice; use parenterally until stools are passed; metronidazole may be indicated for anaerobe overgrowth
Exercise	- Increasing activity may aid in passage of trichobezoars
Fluid therapy	- Rehydration (PO, SC, IV) is essential - Maintenance fluids is = 100 – 120 ml/kg/day
Oral (gastric) hydration	- Important to rehydrate any material in stomach - Can use balanced electrolyte solutions
Grooming	- Brushing the hair may prevent an exacerbation of the problem

	- Routinely brushing long-haired or heavy-shedding individuals for prevention
Nutritional support	- Important in the anorectic rabbit; helps prevent hepatic lipidosis
	- Force-feed = 10-15 ml/kg q8-12h Critical Care for Herbivores (Oxbow Pet Products) or blenderized alfalfa pellets in electrolyte solution (e.g., Pedialyte, Ross), lactated Ringer's solution, or water, and vegetable baby foods (without added sugar)
	- Offer fresh greens (parsley, romaine lettuce, carrot tops, kale, etc.) and timothy or grass hay ad libitum
	- Vitamin supplements (especially vitamin B) prn
Motility modifiers	- Promotes gastric emptying
	- Metoclopramide (0.2-0.5 mg/kg PO, SC q6-8h)
	-Cisapride (0.5 mg/kg PO q8-12h)
Other treatments	-Cholestryamine: treating / preventing enterotoxemia (see Table 56)
	- Simethicone: may reduce abdominal discomfort associated with excess gas (see Table 56)
	- Sulfasalazine: may reduce inflammation of intestinal mucosa (see Table 56)
Laxative, feline	- Because their effectiveness is equivocal, petroleum-based laxatives are probably not indicated
Enzyme supplements	- Use of Proteolytic enzymes such as bromelain (present in fresh pineapple juice) have also been used empirically in cases of trichobezoars; however, their contribution to resolving the problem is equivocal, and they are generally not recommended in most treatment strategies