

Exotic Pet

P R A C T I C E

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SCIENTIFIC ARTICLE

Stabilization of the Emergency Avian Patient

Terry Campbell, D.V.M., Ph.D.

In any emergency treatment of birds, the goals are to control seizures, to stop hemorrhaging, to correct respiratory distress, to correct circulatory disorders, and to stabilize fractures or luxations. These things should be accomplished before the establishment of a diagnosis. A brief assessment of the avian patient should be made. Critically ill or injured birds are often too weak to tolerate an extensive physical examination and medical workup until their condition has been stabilized. Birds that are depressed, poorly responsive, and unable to stand are critically ill and require immediate treatment. Often, a critically ill bird can be stabilized by being placed in a warm (85°F/29.4°C), oxygen-enriched (40% to 50% O₂) cage.

Assessment of the overall body condition can be made by palpation of the pectoral muscle mass overlying the keel or, if the patient can tolerate the stress, by weighing the bird. A prominent keel indicates chronic weight loss and an overall poor body condition. A quick assessment of the hydration status of the bird can be made by examination of the ulnar vein and artery. An easily compressible ulnar vein and artery with small diameter and refill time greater than 1–2 seconds is indicative of significant dehydration (i.e., 10%). Other indications of dehydration may include weakness, sunken eyes, dry mucous membranes, and central nervous system depression.

The characteristics of the droppings may also provide clues to the health status of the avian patient. The color, quantity, and quality (i.e., urates only or feces only) of the droppings aid in the assessment of the critically ill bird. Lime-green urates suggest possible hepatic or hemolytic disease, and in most species hemoglobinuria is suggestive of metal poisoning, especially from lead.

Isoflurane anesthesia can be used to minimize the stress of the manual restraint involved in the assessment of the critically ill or fractious bird. Each bird must be assessed for the risk involved in anesthesia vs. the stress associated with manual restraint. If anesthesia is used, the time the patients is under should be kept to a minimum and the bird should be closely monitored. This is also a good time to place IO or IV catheters.

A small sample of blood can be obtained for quick laboratory assessment of the critically ill bird. A packed cell volume (PCV), estimated total protein (total solids reading from a refractometer), and estimated whole blood glucose are minimum blood tests that can be performed initially. Other diagnostic procedures should be reserved for when the bird's condition becomes stable. An elevated PCV (greater than 55%) and total solids value (greater than 5.5 g/dL) are suggestive of dehydration. A PCV less than 35% is suggestive of anemia. A total solids value less than 2.5 g/dL indicates a poorer prognosis for survival. Whole blood glucose values can be obtained by using quick chemical test strips. Birds should have blood glucose values greater than 200 mg/dL. Glucose values less than 200 mg/dL indicate a need for glucose

supplementation. Blood glucose values less than 150 mg/dL are often associated with a poor prognosis for survival.

Fluid therapy in birds is meant to correct water deficit, electrolyte disorders, and hypoglycemia. Excessive handling of a hypotensive bird can result in its death; therefore, minimal handling is required during the delivery of fluids.

The resting avian's fluid requirements are estimated to be 40–60 mL/kg/day. The volume of fluid in milliliters necessary to correct dehydration is obtained by multiplying the bird's body weight, in kilograms, by the percentage of dehydration. One fourth to one half of this calculated volume should be given during the first 4–6 hours, with the remainder given during the next 20–28 hours. Healthy birds can tolerate a relatively large acute blood loss (i.e., 20% to 30% of the blood volume); however,

continues on page 90

ISSUE

HIGHLIGHTS:

Wild Animals as Pets

ROUNDTABLE
page 91

Avian Pediatric Problems

PRACTICE TIP
page 92

Coxofemoral Luxation in a Flemish Giant Rabbit

CASE REPORT
page 93

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Stabilization of the Emergency Avian Patient

continues from page 89

blood volume losses greater than 30% (with total solids less than 15%) indicate the need for a transfusion.

Depending on the severity of the deficit and attitude of the avian patient, fluid therapy can be administered by bolus intravenous delivery, repeated subcutaneous administration, or slow intravenous or intraosseous infusion. Intravenous catheters can be difficult to maintain and are best used when the movement of the patient can be restricted. Suggested fluid delivery rates are 10 mL/kg/hr for the first 2 hours and 5–8 mL/kg/hr after 2 hours. The recommended bolus intravenous fluid rates are 10–25 mL/kg over 5–7 minutes. Intraosseous fluids are usually delivered at a rate of 10 mL/kg/hr or less. Subcutaneous fluids are given to birds that are not in critical condition and require the use of isotonic fluids. Oral fluids are used in normotensive birds that are conscious and able to hold up their heads and swallow. Fluids should be warmed (100°F to 102°F) before delivery.

The choice of fluids depends on the needs of the bird and the route of administration. Balanced electrolyte solutions such as lactated Ringer's solution are most useful and versatile. A bird receiving extended fluid therapy with Ringer's solution should be supplemented with 0.1–0.2 mEq potassium daily. A 50% dextrose solution can be given intravenously at a dose of 1 mL/kg as an initial treatment for hypoglycemia. Dextrose solutions of 5%, 10%, and 50% can be given orally, whereas concentrations greater than 2.5% should not be used subcutaneously. Five percent dextrose solutions are hypotonic and should be used with caution when given in any other way than by mouth.

In addition to fluid therapy, other therapeutic plans are often indicated in the critically ill bird. Antibiotics are commonly used in the initial treatment of septicemia. Antibiotics commonly used include: amikacin (10–15 mg/kg bid IV IM); cefotaxime (75–100 mg/kg tid IV IM); enrofloxacin (10 mg/kg bid IM SC PO); piperacillin (100–200 mg/kg tid IV IM); trimethoprim-sulfa (20 mg/kg tid PO); and for suspected chlamydia infections, doxycycline (25–50 mg/kg bid IM SC PO). The use of corticosteroids in the treatment of birds is controversial but may be helpful in the treatment of shock, toxicities, and acute trauma. Dexamethasone (2 mg/kg bid IV IM) and methylprednisolone acetate (0.5–1.0 mg/kg IM) have been used with apparent success in birds. Iron dextran at a dose of 10 mg/kg given intramuscularly and repeated in 7–10 days is helpful in the treatment of anemic birds and is often used in place of blood transfusions in certain situations. Calcium gluconate (5–10 mg/kg bid IM SC) is given in cases of hypocalcemia. Nutritional support can be provided by a number of commercially prepared enteral formulas.

Cardiopulmonary resuscitation can be attempted by establishing a patent airway using an endotracheal tube and massaging the heart by firm, rapid compression of the keel. Epinephrine (0.1 mg/kg) and doxapram hydrochloride (5–10 mg/kg) can be given intracardially or intratracheally as needed.

An attempt to stabilize a critically ill avian patient should be made before performing a complete diagnostic evaluation or providing treatment. Any physical handling of the bird should be as brief as possible to minimize the stress of handling. Isoflurane anesthesia is useful in the reduction of stress during handling and should be considered when treating the critically ill bird.

Suggested Reading

1. Abou-Madi N, Kollias GV: Avian fluid therapy, in Kirk RE, Bonagura JD (eds): *Current Veterinary Therapy XI: Small Animal Practice*. Philadelphia, WB Saunders, 1992, pp 1154–1159.
2. Quesenberry KE, Hillyer EV: Supportive care and emergency therapy, in Ritchie BW, Harrison GJ, Harrison LR (eds): *Avian Medicine: Principles and Application*. Lake Worth, Fla, Wingers, 1994, pp 382–416.

WHAT'S YOUR DIAGNOSIS ???

A number of members from a colony of inbred Mongolian gerbils (*Meriones unguiculatus*) was observed to have alopecia developing over the nostrils and upper lip between the nostrils and mouth.¹ Some of the lesions on the animals had erythematous areas, developed a moist dermatitis, and had a reddish-brown crusting. The gerbils were housed on corncob bedding and provided with a commercial rodent chow and water ad lib. The lesions were noticed during particularly hot and humid (60% humidity) weeks in the summer. The animals were not observed fighting. Additionally, routine handling induced seizures (mild to severe) in most of the gerbils.

Questions

1. What is the cause of the reddish-brown crusting?
2. What is the cause of the seizures?
3. How would you treat the seizures?
4. What is your diagnosis of the dermatitis, and how would you treat it?

continues on page 93

ROUNDTABLE

Wild Animals as Pets

Part 2

Q. Does AVMA malpractice insurance cover the treatment of wild animals?

Dr. Suedmeyer: As I understand it, as long as the treatment is a "legal act," it is covered by malpractice insurance.

Dr. Tynes: The AVMA Liability Trust will only cover us (regarding malpractice) as long as we practice "within the law." Therefore, if you treated a pet that was being kept illegally (without the required permits), you would not be covered for malpractice in the case of a lawsuit.

Dr. Campbell: I don't know. Doctors should contact the AVMA for clarification.

Q. How does a veterinarian know which pets are considered wild or endangered?

Dr. Suedmeyer: Doctors should familiarize themselves with local animals that are considered wild or dangerous. If unsure, doctors can contact local conservation or wildlife authorities.

Dr. Tynes: Doctors should have references to allow them to identify various wildlife species they may encounter or should

know whom to call to obtain the information. Veterinarians should not treat wildlife if they are unfamiliar with the species and the laws governing their care. These pets should be referred to another doctor who can properly care for the animal.

Dr. Campbell: If the doctor is unsure, he should consult with state or federal wildlife authorities.

Q. Does a veterinarian need to report to some government authority if a client brings in a wild animal for treatment?

Dr. Suedmeyer: In Missouri, a veterinarian is not legally responsible for reporting wild animals presented for treatment. Ethically, the veterinarian should report incidences in which he knows the animal is held illegally.

Dr. Tynes: This is hard to say, and a lawyer might be better equipped to answer this query. You can also check with various state agencies to see if they require reporting.

Dr. Campbell: Not if the client is properly permitted to possess or rehabilitate a wild animal, although the client is required to

report this (usually on an annual basis to the issuing agency). If no permits are involved, doctors should contact the state or federal wildlife authority.

Q. If a doctor is unsure if a pet is wild or endangered (for example, when presented with a "tortoise"), how should he handle the client who requests treatment for a wild pet?

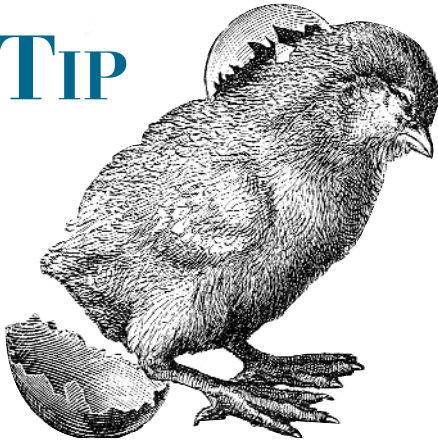
Dr. Suedmeyer: Contact the local conservation authority. In Missouri, knowingly treating an endangered animal may imply complicity (if the doctor is unaware the animal is endangered, he is not liable for rendering treatment). Documenting names, addresses, phone numbers, and appointment times will help if questions should arise.

Dr. Tynes: The doctor should first identify the species of pet if possible. I inform owners about the dangers of rabies when dealing with clients who want to raise a baby skunk or raccoon. I also try to paint a grim picture of the difficulties in hand-raising wildlife, and can usually convince these people to turn the animal over to a wildlife rehabilitator. I feel we have a duty to educate people and not just give in to their requests.

Dr. Campbell: The doctor should ask the client where he obtained the pet and if he has the proper permits. If there is any doubt, the proper authorities should be notified and confiscation of the pet will typically occur. Often, clients don't know that it is illegal to keep certain wild animals and most will readily surrender the animal once the facts are explained to them. If the doctor suspects that an animal presented for treatment is a protected species, the proper permits allowing the "owner" to keep the animal should be presented before treatment of the pet unless emergency care is required.

PRACTICE

TIP



Shawn Messonnier, D.V.M.

Avian Pediatric Problems

Occasionally, chicks may develop splayleg. This condition may occur if the chick is on a slippery surface or if the mother accidentally sits on the chick. Premature closure of the leg bones may also result in a similar presentation.

For young chicks, the problem may be corrected by splinting the leg in some fashion. This is most often done by taping or hobbling the legs. Sometimes packing the chick in a cup with paper towels can be helpful. Placing the legs through a hole in foam padding can also be tried. The chick must be examined frequently and the bedding or taping changed as necessary to prevent vasoconstriction that may result from rapid growth.

HOW I ...

Approach Anorexia in Snakes

Shawn Messonnier, D.V.M.

In my practice, anorexia is the most common reason snake owners seek our advice. Although most of these snakes are “normal” and healthy, some of them are debilitated and require extensive treatment.

Because anorexia is a clinical sign and not a disease, owners are told that many internal problems can cause anorexia and that an extensive diagnostic workup is recommended. Some owners pursue the recommended testing (which includes a CBC, serum biochemical profile, and a colonic wash); others opt for a single force-feeding (using a mixture of Emerald II-Lafeber and a meat-based baby food given via stomach tube) and hope for the best.

I recommend a colonic wash to check for internal parasites and a blood profile, which is most easily obtained via cardiac puncture, which can easily be done without side effects to the pet. The blood profile is used to check for signs of gout, anemia, infection, inflammation, renal or hepatic disease, and blood parasites (which are often benign but can occasionally cause clinical disease). Specific problems are treated. If the physical examination uncovers other signs of disease (such as a swelling within one of the quadrants or signs compatible with infectious stomatitis), additional examinations such as radiographs, aspiration cytology, or a culture and sensitivity test can be performed.

Snakes that are ill at the time of examination are treated aggressively with force-feeding, subcutaneous and intracoelomic fluids, and parenteral antibiotics (enrofloxacin, amikacin, piperacillin sodium, or some combination of these).

Most of the snakes I see with anorexia are ball pythons; many of these have what I consider a normal, or *physiologic*, anorexia that develops from the stress of captivity or a recent change in ownership. However, I do not reach a diagnosis of physiologic anorexia without ruling out more serious problems. Once owners understand the importance of diagnostics, they usually agree to some type of test.

FROM THE LITERATURE

Lactobacillus in Rabbits

Dietary supplementation with lactobacillus products is often recommended for rabbits with enteric disease or as an adjunct to oral antibiotic therapy. Lactobacillus bacteria are not major inhabitants of the rabbit gastrointestinal tract. Additionally, the low pH of the stomach may prevent live bacteria from surviving gastrointestinal transit. Research by Yu and Tsen¹ showed only *L. fermentum* strains survived gastric juice but were not able to colonize the intestines. Therefore, lactobacilli used as probiotics are probably ineffective in rabbits. The value of continuously feeding lactobacilli during enteritis or stress remains to be shown.

Deeb B: Lactobacillus in the rabbit digestive tract. *Rabbit Health News* April 1995, pp 6-7.

Editor's Note: The use of lactobacillus products in rabbits and rodents is popular, yet it has always been controversial. Though they may not cause harm, their true efficacy is doubtful. This article confirms that lactobacillus does not commonly colonize the intestinal tract of the rabbit.

Reference

1. Yu B, Tsen HY: Lactobacillus cells in the rabbit digestive tract and the factors addressing their distribution. *J Appl Bacteriol* 75:269-275, 1993.

CASE REPORT

Coxofemoral Luxation in a Flemish Giant Rabbit

Jerry LaBonde, M.S., D.V.M.

A 12-pound 6-year-old Flemish Giant rabbit was brought in with an acute onset of lameness of the right hind leg. The owner was unaware of any history of trauma. The rabbit's habitat consisted of a large backyard it had shared with a golden retriever for the last 3 years.

On physical examination the rabbit was found to bear no weight on the right hind leg; two small abrasions were observed on the distal tarsus, and instability was palpated at the right coxofemoral joint. There were no other injuries or abnormalities observed. A neurologic examination had normal results.

Radiographs revealed femoral head displacement cranial and dorsal to the acetabulum. There were no indications of spondylosis or osteoarthritis of the hips. Because the injury appeared acute, the rabbit was anesthetized with isoflurane by mask. A closed reduction of the joint was performed by rotating the head of the femur ventrally and medially over the edge of the ilium until the head of the femur rested into the acetabulum. The leg was then held in place with a modified Ehmer sling. The abrasions were cleaned and treated with silver sul-

fadiazine cream before the leg was wrapped. The owner was instructed to keep the animal confined for 2 weeks, when a recheck examination was scheduled. After 4 days the owner was concerned because the bandage had slipped somewhat and the rabbit had chewed at the bandage. The recheck examination was performed right away, and it was observed that the coxofemoral joint had re-luxated. Another attempt to reduce the hip was made but was unsuccessful.

The owner elected to delay on femoral head and neck ostectomy at this time and wanted to see how the rabbit would do at home. After 5 days the rabbit was using the leg only rarely, and the owner perceived the animal was in pain.

A femoral head and neck ostectomy was recommended for the right hip on the basis of the rabbit's large size, its lack of response to treatment, and the high activity level the animal had exhibited before the injury.

A modified craniolateral approach to the hip joint was performed as described for dogs and cats. The head and neck of the femur was removed with an osteotome, and a biceps muscle

sling arthroplasty was performed. Joint capsule, muscle, and subcuticular tissue was closed with polyglactin 910 (Vicryl). Skin sutures were not needed because of the subcuticular pattern in the skin. I usually try to close all my rabbit incisions with a subcuticular pattern to prevent licking and chewing at the incision. Butorphanol was given postoperatively at 0.3 mg/kg subcutaneously.

Because the leg was not used for a 3-week period before the surgery, the owner was instructed to perform passive motion and massage therapy to the rabbit's leg 3 times daily for 10 days. The rabbit was also given 12.5 mg carprofen (Rimadyl) twice daily for 5 days. At the postsurgical recheck examination the rabbit had approximately 60% of normal function the right hind leg. The client was able (and the rabbit was willing) to swim the rabbit with support under the chest twice daily for 5–10 minutes each time for 7 more days. The rabbit's condition improved to a point where normal, pain-free ambulation was achieved on a flat surface. Some weakness was observed when the animal attempted to jump or climb stairs.

What's Your Diagnosis???

continues from page 91

Answers

1. The reddish-brown crusting is a result of porphyrins secreted by the harderian glands. It is of no concern, other than it may act as an irritant that may precipitate the dermatitis. The crusting will fluoresce under UV light.

2. Seizures can occur in gerbils and represent an inherited susceptibility in selectively inbred lines. These particular gerbils were from a seizure-prone inbred strain.

3. As a rule, seizures in gerbils

that result from inbreeding do not require treatment.

4. The diagnosis is nasal dermatitis, also known as "sore nose" or "facial eczema." Stress caused by overcrowding, excess lighting, and high humidity (50% or less is ideal) may precipitate excessive harderian gland secretions. Rubbing of the secretions may worsen the problem and spread the moist dermatitis to the paws and abdomen.

Colonization of the damaged skin can occur by the opportunistic pathogens *Staphylococcus xylosum* (most common) or *Staphylococcus aureus*.

Treatment involves topical or parenteral antibiotics effective against *Staphylococcus* sp.; streptomycin is avoided because of its direct toxicity to gerbils. These gerbils were successfully treated with gentamicin in the drinking water (dosed at 10 mg/kg for 5 days).

Reference

1. Donnelly T: What's your diagnosis?: Nasal lesions in gerbils. *Lab Animal* Feb 1997, p 15.

VOLUME 2 SUBJECT INDEX

A

Acariasis, in reptiles, 19
 Acepromazine
 in rabbits, 20
 in sugar gliders, 71
 Adrenalectomy, in ferrets, 12, 63
 Adrenal tumors, in ferrets, 9, 10
 Adrenocortical disease, in ferrets, 63
 African grey parrots, thermoplastic use in, 31
 Alopecia, in ferrets, 9
 Amazon parrot, mycobacterial tracheitis in, 7
 Amforol, for enteritis in ferrets, 34
 Amikacin, in birds, 26, 90
 Ammonia, in aquarium, 17-18
 Amoxicillin, for enteritis in ferrets, 34
 Amphibians
 drawing blood from, 64
 terrarium checklist for, 14
 Amputation, of fractured leg in small animals, 8
 Anemia, in parakeet, 68
 Anesthesia
 for birds, 89
 for rabbits, 20
 for reptiles, monitoring, 49-50, 52
 Annual care of exotic pets, 72
 Anorexia
 in box turtles, 70
 in iguanas, 11, 12-13
 in rabbits, 4, 15, 30
 in snakes, 92
 Antibiotics
 for birds, 26, 28
 for *Clostridium* in green-winged macaw, 39
 emergency care, 90
 in guinea pigs, 37, 45
 Anticoagulants, in blood collection, 35
 Appetite, decreased
 in guinea pig, 35, 37
 in iguanas, 19, 21
 Aquarium, water quality in, 17-18
Atelerix albiventris, 65
 Atropine
 in frogs, 5
 in rabbits, 20

B

Ball python, care sheet for, 22
 Birds
 central nervous system signs in racing pigeons, 40
 Clostridium in green-winged macaw, 39
 crop fistulas in, 23
 dystocia in, 27-28
 ectoparasites of, 39
 egg binding in, 6, 25
 emergency medicine for, 25-26, 28, 54, 89-90
 fall by, repetitive movements after, 27, 29
 fluoxetine for feather

 picking, 68
 geriatric, care of, 59
 hematomas in, after venipuncture, 67
 hemochromatosis in, 88
 iron storage disease in mynah, 52-53, 55
 mycobacteriosis in, 68, 75-76
 neonatal psittacines, 57-58, 60
 obesity in, 73-74, 77, 81-82, 85
 radiography in, 83
 seizures in, 25, 29
 smoke inhalation in cockatiel, 47
 spinal cord of, 29
 splayleg in chicks, 92
 thermoplastic use in parrots, 31
 vitamin A toxicity in, 85
 watery droppings, feather loss, and listlessness in parakeet, 67, 68
 weakness and high temperature in Patagonian conure, 51, 53
 Bismuth subsalicylate, for enteritis in ferrets, 34
 Bites, cat and dog, in birds, 25
 Black swans, blood values for, 36
 Bleeding, in birds, 25, 54
 Blood and blood-lymph biochemical values, in turtles, 53
 Blood testing
 for cholangiocarcinoma in green iguana, 87
 collection and handling of blood, 35, 37
 venipuncture in ferrets, 15
 Blood values for black swans, 36
 Bone disease, metabolic in neonatal psittacines, 60
 in reptiles, 40, 46
 Box turtles
 care sheet for, 70
 hibernation of, 38
 Butorphanol
 in rabbits, 20
 in sugar gliders, 71

C

Calcium, for birds, 27, 28
 Calcium deficiency, in reptiles, 46
 Calcium gluconate, in birds, 90
 Calcium sand and stones, in rabbits and guinea pigs, 1-2
 Calculi, in rabbits and guinea pigs, 1-2, 4
Candida albicans
 in African hedgehog, 79
 in neonatal psittacines, 58
 Cardiopulmonary resuscitation, of birds, 90
 Cardiovascular disease, in birds, 81-82
 Case quizzes; see Diagnosis case quizzes
 Case reports

cholangiocarcinoma in green iguana, 87
Clostridium in green-winged macaw, 39
 coxofemoral luxation in Flemish Giant rabbit, 93
 crop burn, 23
 dysuria in ferret, 63
 intestinal candidiasis in African hedgehog, 79
 iron storage disease in mynah, 52
 maggot infestation in rabbit, 15
 mycobacterial tracheitis in Amazon parrot, 7
 orchietomy of mature sugar glider, 71
 smoke inhalation in cockatiel, 47
 thermoplastics, 31
 Catheterization
 for fluid therapy in birds, 28
 urinary, in ferrets, 63
 Cefotaxime, in birds, 90
 Chameleons
 color change around mouth in, 83, 84
 parasitized, 5
 swollen limbs in, 40
 Chlorine, fish and, 18
 Choana, Gram stain of, 16
 Cholangiocarcinoma, in green iguana, 87
 Cisapride, for trichobezoars/intestinal hypomotility in rabbits, 11
 Clindamycin, for *Clostridium* in green-winged macaw, 39
Clostridium, in green-winged macaw, 39
 Cockatiels, smoke inhalation in, 47
 Cockroaches, hissing, husbandry requirements for, 41, 42
 Color change around mouth, in chameleons, 83, 84
 Copper toxicity, 61
 Corneal edema, in frogs, 4-5
 Corticosteroids
 for birds, 28
 for enteritis in ferrets, 36
 Coxofemoral luxation, in Flemish Giant rabbit, 93
 Crabs, hermit, husbandry requirements for, 41-42
 Crop fistulas, 23
 Crop overstretching, in neonatal psittacines, 58
 Crop stasis, 57-58
 Cryptosporidiosis, in reptiles, 21
 Cystic calculi, diet for rabbits and, 4
 Cysts, prostatic, in ferrets, 9

D

Deferoxamine, in iron storage disease, 53, 55
 Dehydration, in neonatal

psittacines, 58
 Dental problems
 anorexia in rabbits from, 30
 in hedgehogs, 66
 in rabbits and rodents, 67, 69
 Dermatitis, in gerbils, 91, 93
 Dermatopathy, in rodents, 43, 45
 Dexamethasone
 in birds, 90
 for hyperadrenocorticism in ferrets, 10
 for maggot infestation in rabbit, 15
 for smoke inhalation in cockatiel, 47
 Diabetes mellitus, in birds, 82
 Diagnosis case quizzes
 alopecia, dermatitis, and seizures in gerbil, 91, 93
 anorexia and lethargy in iguana, 11, 12-13
 anuria and lethargy in potbellied pig, 75-76
 color change around mouth in chameleon, 3, 4-5
 decreased appetite/thirst and lethargy in guinea pig, 35, 37
 hematuria in New Zealand white rabbit, 43-44, 47
 hepatopathy in ferret, 59, 61
 "paleness" and decreased appetite in iguana, 19, 21
 repetitive movements after fall by bird, 27, 29
 watery droppings, feather loss, and listlessness in parakeet, 67, 68
 weakness and high temperature in Patagonian conure, 51, 53
 "white eyes" in frogs, 3, 4-5
 Diagnostic tests; see also Blood testing; Laboratory tests
 for fish, 13
 for rodents, 24, 43, 45
 Diarrhea, in ferrets, 34
 Diazepam
 in rabbits, 20
 for seizures in birds, 29
 Diet; see Nutrition
 Dioctyl sulfosuccinate, for hairballs in rabbits, 11
 Doppler ultrasonography, in reptiles, 50
 Doxycycline, in birds, 26, 28, 90
 Dyspnea, in birds, 25, 28
 Dystocia, in birds, 27-28

Dysuria, in ferrets, 63

E

Ear mites, in rabbits, 29
 Egg binding, in birds, 6, 25
 Electrocardiography, in reptiles, 49-50
 Emergency medicine, for birds, 25-26, 28, 54, 89-90
Encephalitozoon cuniculi, in rabbits, 79
 Enrofloxacin
 in birds, 90
 for lethargy in iguana, 12
 for maggot infestation in rabbit, 15
 for smoke inhalation in cockatiel, 47
 Enteritis, epizootic catarrhal, in ferrets, 33-34, 36
 Epizootic catarrhal enteritis, in ferrets, 33-34, 36
Erinaceus europaeus, 65
 Euthanasia, unnecessary, preventing, 44
 Evaluation of exotic pets, annual, 72

F

Fat, in birds, 73, 74
 Feather picking, 68
 Femoral head and neck excision, in white-throated monitor, 45
 Fenbendazole
 in hedgehogs, 66
 for reptile endoparasitism, 5
 Ferrets
 dysuria in, 63
 epizootic catarrhal enteritis in, 33-34, 36
 fipronil in, 32
 geriatric, 51
 hairballs in, 86
 hepatopathy in, 61
 hyperadrenocorticism in, 9-10, 12
 splenomegaly in, 47
 venipuncture in, 15
 Fipronil, in rabbits and ferrets, 32
 Fish
 diagnostic tests for, 13
 water quality and, 17-18
 Fistulas, crop, 23
 Flemish Giant rabbit, coxofemoral luxation in, 93
 Fluid therapy
 for birds, 28, 89-90
 for enteritis in ferrets, 34
 for reptiles, 80
 Fluorescein staining of eyes, in reptiles and amphibians, 4, 5
 Fluoxetine, for feather picking, 68
 Foreign bodies, in neonatal psittacines, 58
 Fractures, thermoplastics and, 31
 Frogs
 inducing metamorphosis in, 61
 "white eyes" in, 3, 4-5
 Frontline/Frontline-Topspot, in rabbits and ferrets, 32

G

Gastric stasis, diet for rabbits and, 4

continues on page 95

continues from page 94

- Gastrointestinal tumors, in hedgehogs, 75
- Gerbils, alopecia, dermatitis, and seizures in, 91, 93
- Glucagon, in birds, 74
- Glycopyrrolate, in rabbits, 20
- Gram stain, of choana, 16
- "Greenies" (epizootic catarrhal enteritis), in ferrets, 33-34, 36
- Green winged macaws, *Clostridium* in, 39
- Griseofulvin, for dermatopathies in rodents, 45
- Guinea pigs
decreased appetite/thirst and lethargy in, 35, 37
penicillin in, 45
sarcoptic mange in, 5
skin problems in, 48
urinary tract disorders in, 1-2
- H**
- Hairballs
in ferrets, 86
in rabbits, 11, 30
- Hamsters, amputation of fractured leg in, 8
- Hedgehogs
gastrointestinal tumors in, 75
husbandry for, 65-66
intestinal candidiasis in, 79
skin scraping in, 13
- Hematomas, in birds after venipuncture, 67
- Hemochromatosis, in birds, 88
- mynahs, 52-53, 55
- Hemorrhage, in birds, 25
- Hepatic lipidosis, in birds, 81, 85
- Hepatopathy, in ferret, 61
- Hermit crabs, husbandry requirements for, 41-42
- Husbandry
hedgehog diseases and, 65-66
neonatal psittacines and, 57-58
for tarantulas and other invertebrates, 41-42
- Hyperadrenocorticism, in ferrets, 9-10, 12, 63
- Hypercalciuria, in rabbits and guinea pigs, 1-2
- Hypoxia, in fish, 18
- I**
- Iguanas
anorexia and lethargy in, 11, 12-13
cholangiocarcinoma in, 87
metabolic bone disease in, 46
"paleness" and decreased appetite in, 19, 21
thermoplastic use in, 31
- Incisors, of rabbits, trimming, 61, 69
- Infections
Clostridium in green-winged macaw, 39
dermatophyte, in rodents, 43
epizootic catarrhal enteritis in ferrets, 33-34, 36
in hedgehogs, 66, 79
mycobacterial tracheitis in yellow-headed Amazon parrot, 7
in neonatal psittacines, 58
- Infectious stomatitis, in reptiles, 68, 84
- Ingluvitis, in neonatal psittacines, 58
- Intestinal candidiasis, in African hedgehog, 79
- Intestinal hypomotility, in rabbits, 11
- Invertebrates, husbandry requirements for, 41-42
- Iron storage disease, in birds, 88
mynahs, 52-53, 55
- Iron toxicity, 61
- Isoflurane
in hedgehogs, 65
in sugar gliders, 71
- Itraconazole, for candidiasis in hedgehog, 79
- Ivermectin
for dermatopathies in rodents, 45
for ear mites in rabbits, 29
for ectoparasites in birds, 39
in hedgehogs, 66
in reptiles, 19
sensitivity to, 16
toxicity, treating, 77
- K**
- Ketamine
in rabbits, 20
in sugar gliders, 71
- Knemidocoptic mange, ivermectin in, 39
- L**
- Laboratory tests; see also Blood testing
for birds, 37, 89
blood values for black swans, 36
for cholangiocarcinoma in green iguana, 87
for rodents, 24
- Lactobacilli, in rabbits, 92
- Law, in care of wild animals, 83-84, 91
- Leg deformities, in neonatal psittacines, 60
- Lethargy
in guinea pig, 35, 37
in iguanas, 11, 12-13
- Limbs, swollen, in chameleons, 40
- Lipid keratopathy, in reptiles and amphibians, 5
- Lipidosis, hepatic, in birds, 81, 85
- Lipomas, in birds, 82
- Lithium heparin, in blood collection, 35
- Liver disease, in ferret, 61
- Lizards, monitor
femoral head and neck excision in, 45
parasitized, 5
- Lysodren (mitotane), for hyperadrenocorticism in ferrets, 10, 12
- M**
- Macaws
aging changes in, 59
green winged, *Clostridium* in, 39
- Madagascar hissing cockroaches, husbandry requirements for, 42
- Maggot infestation, in rabbits, 15
- Malpractice insurance, wild animals and, 91
- Manganese, in iron storage disease, 55
- Mange
knemidocoptic, ivermectin in, 39
sarcoptic, in guinea pigs, 5
- Metabolic bone disease, in reptiles, 40, 46
- Methyprednisolone acetate, in birds, 90
- Metoclopramide, for trichobezoars/intestinal hypomotility in rabbits, 11
- Metronidazole, for *Clostridium* in green-winged macaw, 39
- Microsporum*, in rodents, 43
- Mites
ear, in rabbits, 29
hedgehogs and, 66
in reptiles, 19
in rodents, 43
- Mitotane, for hyperadrenocorticism in ferrets, 10, 12
- Molars, overgrown, in rodents, 67, 69
- Monitor lizards
femoral head and neck excision in, 45
parasitized, 5
- Monkeys, zoonoses and, 62
- Mycobacterial tracheitis, in yellow-headed Amazon parrot, 7
- Mycobacteriosis, in birds, 68, 75-76
- Myiasis, in reptiles, 19
- Mynah birds
hemochromatosis in, 88
iron storage disease in, 52-53, 55
- N**
- Nebulization, for birds, 28
- Nephritis, chronic interstitial, in rabbits and guinea pigs, 2
- New Zealand white rabbits, hematuria in, 43-44, 47
- Nutrition
for birds
critical care patients, 28
egg binding and, 6
geriatric birds, 59
in iron storage disease in mynah, 53, 55
neonatal psittacines, 60
obesity and, 74, 77, 81
sick bird, 54
sugar gliders, 78
for box turtles, 70
feeding rabbits, 3-4, 30
for geriatric ferrets, 51
for iguanas, 21
- Nystatin, for crop fistulas, 23
- O**
- Obesity, in birds, 73
characteristics and predisposing factors, 73-74
diet and, 74, 77, 81
management, 82, 85
medical problems from, 81-82
pediatric considerations, 81
- Orchiectomy, of mature sugar glider, 71
- Ovacentesis, for dystocia in birds, 27
- Oxygen, dissolved, in water, 18
- Oxygen therapy, for birds, 28
- Oxytocin, for dystocia in birds, 27
- P**
- Paleness, in iguanas, 19, 21
- Pancreatitis, acute necrotizing, in birds, 82
- Parakeets, grey cheek, watery droppings, feather loss, and listlessness in, 67, 68
- Parasites
caged birds and, 39
reptiles and, 5, 19, 21
rodents and, 43
- Parrots
mycobacterial tracheitis in yellow-headed Amazon parrot, 7
thermoplastic use in, 31
- Patagonian conure, weakness and high temperature in, 51, 53
- Penicillin
in guinea pigs, 45
in hedgehogs, 66
- Petaurus breviceps*
care sheet for, 78
orchiectomy of, 71
- Phenobarbital, for seizures in birds, 29
- Phlebotomy, in mynah, 53, 55
- Pigeons, racing, central nervous system signs in, 40
- Pigmentation around mouth, in chameleons, 83, 84
- Pigs, potbellied, urinary disorders in, 75-76
- Piperacillin, in birds, 26, 90
- Polyomavirus, 58
- Potbellied pigs, urinary disorders in, 75-76
- Praziquantel, in hedgehogs, 66
- Premolars, overgrown, in rodents, 67, 69
- Prostaglandins, for dystocia in birds, 27
- Prostate enlargement, in ferrets, 63
- Prozac (fluoxetine), for feather picking, 68
- Psittacines
fluoxetine for feather picking in, 68
neonatal, 57-58, 60
- Pulse oximetry, in reptiles, 50
- Pyelonephritis, in rabbits and guinea pigs, 2
- Pyrethrin products, for dermatopathies in rodents, 45
- Pyrethrin/pyrethroid products, in reptiles, 21
- Python regius*, care sheet for, 22
- Q**
- Quantitative image analysis, 55
- R**
- Rabbits
anesthesia for, 20
anorexia in, 4, 15, 30
coxofemoral luxation in Flemish Giant rabbit, 93
dental problems in, 67, 69
ear mites in, 29
feeding, 3-4
fipronil in, 32
hematuria in New Zealand white rabbit, 43-44, 47
lactobacilli for, 92
with maggot infestation, 15
trichobezoars in, 11, 30
trimming teeth of, 61, 69
urinary tract disorders in, 1-2
wryneck in, 79
- Radiography, in birds, 83
- Red-eared sliders, blood and blood-lymph biochemical values in, 53
- Renal disease
in iguanas, 21
in rabbits and guinea pigs, 2
- Repetitive movements, after fall by bird, 27, 29
- Reproductive disorders, in birds, 82
- Reptiles; see also specific types
anesthesia monitoring, 49-50, 52
care sheet for ball python, 22
care sheet for box turtle, 70
cryptosporidiosis in, 21
ectoparasites in, 19, 21
endoparasites in, 5
fluid administration to, 80
infectious stomatitis in, 68, 84
suture patterns for surgery in, 56
terrarium checklist for, 14
- Respiration, in reptiles, monitoring, 49-50
- Respiratory infections, in hedgehogs, 66
- Ringer's solution, in reptiles, 80
- Rodents; see also specific types
dental problems in, 67, 69
dermatopathy in, 43, 45, 48
laboratory tests for, 24
trimming teeth of, 69

continues on page 96

Volume 2 Subject Index

continues from page 95

- S**
- Sarcoptic mange, in guinea pigs, 5
- Seizures
in birds, 25, 29
in gerbils, 91, 93
in rabbits, 32
- Selotec, for lethargy in iguana, 12, 13
- Sexing snakes, 44
- Skin problems, in rodents, 43, 45, 48
- Skin scraping, 13
- Smoke inhalation in cockatiel, 47
- Snakes
anorexia in, 92
cryptosporidiosis in, 21
sexing, 44
- Sour crop, 57
- Spinal cord, of birds, 29
- Splayleg, in chicks, 92
- Splenomegaly, in ferrets, 47
- Spraddleleg, in neonatal psittacines, 60
- Steroids
for birds, 28
for enteritis in ferrets, 36
- Stomatitis, infectious, in reptiles, 68, 84
- Stones, in rabbits and guinea pigs, 1-2
- Sucralfate, for enteritis in ferrets, 36
- Sugar gliders
care sheet for, 78
orchiectomy of, 71
- Sun conure, crop fistula in, 23
- Suture patterns, in reptile surgery, 56
- Swans, black, blood values for, 36
- T**
- Tarantulas, husbandry requirements for, 41, 42
- Teeth; see also Dental problems
of rabbits and rodents, trimming, 61, 69
- Temperature, for sick bird, 54
- Terrapene*, care sheet for, 70
- Terrariums, for reptiles and amphibians, 14
- Thermoplastics, 31
- Thirst, decreased in guinea pig, 35, 37
- Thyroid dysfunction, in birds, 82, 85
- Thyroxine, in frogs, 61
- Ticks, in reptiles, 19
- Torticollis, in rabbits, 79
- Toucans, hemochromatosis in, 88
- Toxicity, vitamin A, in birds, 85
- Tracheitis, mycobacterial, in yellow-headed Amazon parrot, 7
- Trauma, in birds, 25
- Tresaderm, for ear mites in rabbits, 29
- Trichobezoars, in rabbits, 11, 30
- Trichophyton*, in rodents, 43
- Trimethoprim-sulfa
in birds, 90
in guinea pigs, 37
for lethargy in iguana, 12, 13
- Trimethoprim-sulfadiazine, in hedgehogs, 66
- Trimethoprim-sulfamethazine, in iguanas, 21
- Trimethoprim-sulfamethoxazole
for candidiasis in hedgehog, 79
for crop fistulas, 23
in sugar gliders, 71
- Tumors, gastrointestinal, in hedgehogs, 75
- Turtles
blood and blood-lymph biochemical values in, 53
box
care sheet for, 70
hibernation of, 38
ivermectin toxicity in, 77
- Tylosin, for *Clostridium* in green-winged macaw, 39
- U**
- Ultrasonography, in reptiles, 50
- Urinary disorders, in potbellied pigs, 75-76
- Urinary tract disorders, in rabbits and guinea pigs, 1-2
- Urolithiasis
in potbellied pigs, 76
in rabbits and guinea pigs, 1-2
- V**
- Venipuncture, 35
in amphibians, 64
in birds, hematomas after, 67
in ferrets, 15
- Vetoplast, 31
- Viral infections, in neonatal psittacines, 58
- Vitamin A toxicity, in birds, 85
- Vitamins, for birds, 28
- Vulva, swollen, in ferrets, 9
- W**
- Water, for rabbits, 30
- Water quality in fish medicine, 17-18
- Weight, in neonatal psittacines, 60
- Weight loss, program for birds, 85
- White muscle disease, in iguana, 13
- Wild animals as pets, 83-84, 91
- Wryneck, in rabbits, 79
- X**
- Xylazine, in rabbits, 20
- Z**
- Zoonotic diseases
with monkeys, 62
with wild animals, 84

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