



Safe & Humane Handling of SMALL MAMMAL PATIENTS

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Many veterinarians and veterinary technicians are filled with trepidation when small mammal or exotic patients are presented for evaluation. However, handling these pets does not have to be difficult.

NATURE OF SMALL MAMMALS

Understanding the natural history and normal behavioral repertoire of small mammals makes handling easier.

Veterinary Hospital Environment

With the exception of the ferret, small mammals are prey animals with highly developed senses of smell and hearing. In addition, most are nocturnal, cover seeking, and thigmotaxic. Because they can smell predator odors (dogs and cats), bringing them into the veterinary hospital causes stress and defensiveness.

To counteract the small mammal's instinct to panic or struggle, create a "safe" environment:

- Set aside an examination room that is only used for exotic patients, which minimizes their exposure to predator odors.
- Dim the examination room lights and use a clean towel or nonslip mat on the table, which helps the animal feel more secure.
- If the last patient handled was a dog or cat, wash hands thoroughly and wear a clean lab coat or scrubs to further decrease exposure to predator odors.

Examination Room Handling

Be aware that the amount and quality of human handling the animal has already experienced will affect its tractability. Rodents and rabbits are likely to be tamer and less likely to bite if they are handled regularly and gently. Animals that have been handled roughly or in ways that threaten their security may struggle more because they fear handling.

When handling small mammals in the examination room:

1. Observe them first while in the cage or carrier. The

animal's degree of stress or fear may be exhibited by a high respiratory rate; low, crouching posture; attempts to hide; or freezing.

2. Do not remove the animal from the cage until all equipment that you may need is assembled.
3. Ask the owner how the animal is handled and restrained at home. Use the least amount of restraint necessary.
4. Approach small mammals slowly and calmly, keeping your voice low. Avoid loud noises and sudden movements.
5. Instruct owners to bring the pet's favorite food items. If anesthesia is not planned, offer very small bites of these food treats to the patient during examination and handling, which keeps the animal calm and focused on something pleasant. If an animal will not eat favorite foods, it is likely very anxious, afraid, or ill.

GERBILS, HAMSTERS, MICE, & RATS

Species Overview

Be aware that different species of small rodents have different temperaments.

- **Gerbils**, while relatively docile, can be very active and wiggly.
- **Hamsters** are well known for being pugnacious; some species, such as the Roborovski hamster (*Phodopus roborovskii*), while somewhat better tempered, are very small and active, making them harder to handle.
- **Mice** can be challenging because of their small size.

Educate clients that frequent, gentle handling of small mammals, combined with offering very small bites of highly palatable food items, helps the animal associate people with good things. This training makes the veterinary visit less stressful for the pet and the veterinary team.

- **Rats** that are tame are generally less likely to bite than other pet rodents.

General Handling Techniques

1. Keep initial interactions very nonthreatening, allowing the rodent to crawl on your hands to become familiar with your odor.
2. If the animal is comfortable with handling, you may only need mild restraint, such as simply holding onto the base of the tail with one hand while gently cupping the animal in the other, for a brief physical examination. However, gerbils should NOT be held by the base of the tail (see below).
3. In my opinion, while most rodents can be restrained by holding the base of their tails, they should never be lifted by their tails.



Figure 1. Scruffing a rodent

4. Firmer restraint may be required if the animal has had limited handling. For example, most animals can be gently *scruffed* by grasping the skin over the shoulders; in some species, the skin across the back can be held as well. The base of the tail may be grasped with the other hand for added security (Figure 1).

5. Even when scruffed, animals can turn and bite the handler; however, this is uncommon in well-handled rodents. If a painful procedure, such as an injection, is planned, additional protection, such as heavy gloves or a towel, may be needed.

Specific Handling Techniques

- **Gerbil's** tails can easily be degloved of the skin and hair if handled too tightly; avoid holding the base of the tail to prevent such sloughing.
- **Hamsters** are more likely to bite if awakened suddenly. I recommend gently shaking the cage to rouse them, making sure they are aware of your approach. Also, be very careful if scruffing a hamster; doing so too tightly can result in proptosed eyes.



Figure 2. This is a method for holding a tame rodent; note that the thumb and forefinger are grasping the base of the jaw.

- **Mice** can be restrained by holding the base of the tail and allowing the animal to hold onto the cage or a towel with their front feet.
- **Rats** that are docile may be restrained by placing one hand over the dorsum, holding the base of the jaws with the thumb and forefinger. The other hand holds the base of the tail and helps control the animal's movement (Figure 2).

GUINEA PIGS

Species Overview

Similar to tame rats, guinea pigs are less likely to bite than other pet rodents. While most of the suggestions for gerbils, hamsters, mice, and rats apply equally to guinea pigs, guinea pigs are unique because they tend to be vocal when handled. Most of the squeaks and chirps made during human interaction are perfectly normal; in fact, a very quiet guinea pig is more likely to be sick.



Handling Techniques

1. Lift the guinea pig from its cage, with one hand gently grasping the thorax and shoulders and the other holding the hind end for support.
2. A calm guinea pig may be gently corralled on the table, using your hands, for a brief physical examination.
3. A poorly socialized guinea pig, however, may need to be wrapped in a towel for examination.
4. Guinea pigs rarely tolerate or require scruffing.

CHINCHILLAS

Species Overview

While usually docile and unlikely to bite, chinchillas can move very quickly and may try to leap from your hands. Restraint must be firm but gentle; the more firmly you hold a chinchilla, the more likely it will be to struggle. Use only the amount of restraint necessary to keep the animal safe.

Handling Techniques

1. When removing the chinchilla from its cage, support the body with one hand under the thorax and use the other hand to grasp the tail base.
2. Do NOT scruff chinchillas; scruffing can result in a patch of hair loss referred to as *fur slip*.
3. Examine the chinchilla by wrapping it in a thin towel or lightweight blanket (Figure 3), which avoids any chance of fur slip. Use caution, though, as towel-wrapped chinchillas can quickly become overheated.
4. Keep in mind that, if frightened, chinchillas may spray urine on the individuals restraining them.



Figure 3. Chinchilla wrapped in a light-weight blanket for safe restraint.

RABBITS

Species Overview

Rabbits have powerful musculature and a delicate skeleton; a sudden leap while restrained can result in a vertebral fracture. For this reason, when the rabbit is on the examination table, at least one hand should remain on it at all times. Rabbits are likely to struggle and resist han-



Figure 4. An example of the “C” hold for a rabbit, which allows easy examination by one person while restrained by another

Figure 5. The “football hold” is a safe way to transport most rabbits.



Figure 6. Some very tame rabbits will tolerate restraint in this manner, which allows one person to hold the rabbit and perform an initial physical examination, including taking a rectal temperature.

Figure 7. Always return rabbits to their cages putting them in hind end first

dling if they feel insecurely held, especially if lifted off the table. If a rabbit struggles, do NOT attempt to hold it more tightly; instead, put it back on the table, allowing it to calm down prior to further examination.

Handling Techniques

1. Pick rabbits up with one hand behind the front legs and the other underneath the hind end. Then grasp the rabbit firmly to your chest, supporting the spine in the *C hold* (**Figure 4**).
2. Alternatively, lift the rabbit up by placing one hand under the ventrum, supporting the chest and hind end; place the other hand over the rabbit's back, pulling its body to your chest like a football (**Figure 5**).
3. Many tame rabbits will tolerate being held on their backs for examination (**Figure 6**); less cooperative rabbits can be wrapped in a towel. As with chinchillas, beware of overheating.
4. Some rabbits remain calmer if their eyes are covered with hands or a towel.
5. Return rabbits to their cage, hind end first, to prevent them from abruptly kicking to lunge into the cage (**Figure 7**).

What Not To Do

- Take care not to obstruct rabbits' nares during restraint as they are obligate nasal breathers.
- Never attempt to carry or restrain a rabbit by the scruff alone.
- Never restrain rabbits by their ears; it can damage the cartilage and result in a *dropped ear*.

FERRETS

Species Overview

Similar to most of their prey, ferrets have an exquisite sense of smell that plays an important role in their intraspecific communication and hunting. Strong odors, such as alcohol, can result in a strong avoidance reaction, so use sparingly or not at all. Keep in mind that even the tamest ferret, when excited or frightened, can inflict a painful bite.

Handling Techniques

1. A very calm ferret can be restrained by grasping the thorax with one hand, allowing the caudal part of the body to rest in the other.
2. Livelier ferrets may need to be scruffed: Scruff the ferret with one hand, wrapping the other hand loosely around the inguinal area or using it to hold the feet. Keep the body slightly stretched.
3. When stretching the body, be prepared to try different degrees of firmness—stretching the body too much can cause struggling; if the body is not stretched enough, the ferret will not relax.
4. It is common for ferrets to yawn immediately after being scruffed and stretched properly.
5. Distract ferrets during procedures by offering them strong smelling food treats. Soft food items, such as canned dog food or pastes (Nutri-Cal, nutri-cal.com by CSI Chemical Corporation; or Ferretone, eightinonepet.com) can be smeared on a tongue depressor and held in front of the ferret's nose during restraint. Most ferrets will focus on licking the food, ignoring the procedure.



HEDGEHOGS

Species Overview

Restraint and examination of hedgehogs is challenging due to their spiny quills and tendency to curl up rapidly when startled. Numerous handling methods have been described for hedgehogs; the amount of handling the animal has received and temperament will play a large role in effectiveness of any restraint method.

Handling Techniques

1. Use a large plastic spoon to lift a rolled-up hedgehog out of its cage.
2. If the hedgehog remains rolled up, place it in a shallow pan of water, making sure its nose and mouth remain well above water. The hedgehog will unroll enough to allow an initial visual inspection.
3. Allow the hedgehog to walk across a towel on the examination table. Grasp the hind legs, gently pulling back and lifting them slightly off the ground. As the hedgehog focuses on grasping the towel, it can be examined. Do NOT lift the hedgehog completely off the ground by its hind legs.

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Figure 8. Gentle scruffing of a tame hedgehog

4. Very tame hedgehogs may tolerate scruffing: Gently stroke the hedgehog's back, front to back. After several strokes, gently grasp the skin over the dorsum (Figure 8).
5. Less tame hedgehogs may need to be handled with leather gloves or a heavy towel; some will require anesthesia for proper evaluation.

SUGAR GLIDERS Handling Techniques

1. Examine a very tame sugar glider by holding it within a small towel in cupped hands. However, even the tamest sugar glider may bite if restrained too firmly.
2. For a fractious sugar glider, use the thumb and middle finger to hold the head, while placing the fore finger on top of the head; the body is then supported in the hand. Use the other hand to aid in restraint of the body, if necessary.
3. Leather gloves may be necessary to restrain some sugar gliders.
4. Never attempt to restrain a sugar glider by holding onto its tail. ■



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Figure Credits

Figures 1, 2, 4–7. Courtesy M.C. Tynes.

Figure 3. Courtesy Nathaniel A. White II, DVM, MS, Diplomate ACVS.



Valarie Tynes, DVM, Diplomate ACVB, provides consulting services for zoos, pharmaceutical companies, veterinarians, and pet owners. She has worked in private practice as an associate, relief veterinarian, and practice owner. Her special interests include animal behavior problems, miniature pigs, and other exotic pets and small mammals. In addition to frequently speaking at veterinary meetings around the world, Dr. Tynes has authored numerous articles and chapters on the care of miniature pet pigs in addition to a variety of other behavior-related topics. She is also the editor of the recently published book, *The Behavior of Exotic Pets* (Wiley-Blackwell). Dr. Tynes received her DVM from Texas A&M University and completed a residency in clinical animal behavior at University of California–Davis.

Heartgard® Plus

(ivermectin/pyrantel)

CHEWABLES

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae (*Dirofilaria immitis*) for a month (30 days) after infection and for the treatment and control of ascarids (*Toxocara canis*, *Toxascaris leonina*) and hookworms (*Ancylostoma caninum*, *Uncinaria stenocephala*, *Ancylostoma braziliense*).

DOSAGE: HEARTGARD® Plus (ivermectin/pyrantel) should be administered orally at monthly intervals at the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) and 5 mg of pyrantel (as pasamoate salt) per kg (2.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascarids and hookworms is as follows:

Dog Weight	Cheewables Per Month	Ivermectin Content	Pyrantel Content	Color Coding On Foil Backing and Carton
Up to 25 lb	1	68 mcg	57 mg	Blue
26 to 50 lb	1	136 mcg	114 mg	Green
51 to 100 lb	1	272 mcg	227 mg	Brown

HEARTGARD Plus is recommended for dogs 6 weeks of age and older.

For dogs over 100 lb use the appropriate combination of these chewables.

ADMINISTRATION: Remove only one chewable at a time from the foil-backed blister card. Return the card with the remaining chewables to its box to protect the product from light. Because most dogs find HEARTGARD Plus palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food. The chewable should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole.

Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that part of the dose is not lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

HEARTGARD Plus should be given at monthly intervals during the period of the year when mosquitoes (vectors), potentially carrying infective heartworm larvae, are active. The initial dose must be given within a month (30 days) after the dog's first exposure to mosquitoes. The final dose must be given within a month (30 days) after the dog's last exposure to mosquitoes.

When replacing another heartworm preventive product in a heartworm disease preventive program, the first dose of HEARTGARD Plus must be given within a month (30 days) of the last dose of the former medication.

If the interval between doses exceeds a month (30 days), the efficacy of ivermectin can be reduced. Therefore, for optimal performance, the chewable must be given once a month on or about the same day of the month. If treatment is delayed, whether by a few days or many, immediate treatment with HEARTGARD Plus and resumption of the recommended dosing regimen will minimize the opportunity for the development of adult heartworms.

Monthly treatment with HEARTGARD Plus also provides effective treatment and control of ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*). Clients should be advised of measures to be taken to prevent reinfection with intestinal parasites.

EFFICACY: HEARTGARD Plus Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of *D. immitis* for a month (30 days) after infection and, as a result, prevent the development of the adult stage. HEARTGARD Plus Chewables are also effective against canine ascarids (*T. canis*, *T. leonina*) and hookworms (*A. caninum*, *U. stenocephala*, *A. braziliense*).

ACCEPTABILITY: In acceptability and field trials, HEARTGARD Plus was shown to be an acceptable oral dosage form that was consumed at first offering by the majority of dogs.

PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with HEARTGARD Plus which is not effective against adult *D. immitis*. Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with HEARTGARD Plus.

While some microfilariae may be killed by the ivermectin in HEARTGARD Plus at the recommended dose level, HEARTGARD Plus is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.

Keep this and all drugs out of the reach of children.

In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.

Store between 68°F - 77°F (20°C - 25°C). Excursions between 59°F - 86°F (15°C - 30°C) are permitted. Protect product from light.

ADVERSE REACTIONS: In clinical field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported following the use of HEARTGARD: Depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions and hypersalivation.

SAFETY: HEARTGARD Plus has been shown to be bioequivalent to HEARTGARD, with respect to the bioavailability of ivermectin. The dose regimens of HEARTGARD Plus and HEARTGARD are the same with regard to ivermectin (6 mcg/kg). Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target use level) than dogs of other breeds. At elevated doses, sensitive dogs showed adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresis, recumbency, excitability, stupor, coma and death. HEARTGARD demonstrated no signs of toxicity at 10 times the recommended dose (60 mcg/kg) in sensitive Collies. Results of these trials and bioequivalency studies, support the safety of HEARTGARD products in dogs, including Collies, when used as recommended.

HEARTGARD Plus has shown a wide margin of safety at the recommended dose level in dogs, including pregnant or breeding bitches, stud dogs and puppies aged 6 or more weeks. In clinical trials, many commonly used flea collars, dips, shampoos, anthelmintics, antibiotics, vaccines and steroid preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.

In one trial, where some pups had parvovirus, there was a marginal reduction in efficacy against intestinal nematodes, possibly due to a change in intestinal transit time.

HOW SUPPLIED: HEARTGARD Plus is available in three dosage strengths (See DOSAGE section) for dogs of different weights. Each strength comes in convenient cartons of 6 and 12 chewables.

For customer service, please contact Merial at 1-888-637-4251.



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THE REAL-BEEF CHEWABLE. REAL EASY PREVENTION.

It's easy to see how the Real-Beef Chewable supports your recommendation for year-round heartworm disease prevention. HEARTGARD® Plus (ivermectin/pyrantel) is:

- The only heartworm preventive that comes in the Real-Beef Chewable
- The heartworm preventive dogs love to take^{1,2}
- The #1 most requested heartworm preventive³
- Backed by the Plus Customer Satisfaction Guarantee⁴

Heartgard[®]
(ivermectin/pyrantel) **Plus**



¹ Of dogs showing a preference in three studies, dogs preferred HEARTGARD® Chewables over INTERCEPTOR® (milbemycin oxime) Flavor Tabs® by a margin of 37 to 1; data on file at Merial.

² Of dogs showing a preference in two studies, all dogs preferred HEARTGARD Plus Chewables to TRIFEXIS™ (spinosad + milbemycin oxime) beef-flavored chewable tablets; Executive Summary VS-USA-37807 and VS-USA-37808.

³ Opinion Research Corporation, Heartworm Prevention Medication Study, 2012. Data on file at Merial.

⁴ Ask your Merial Sales Representative for full guarantee details.



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IMPORTANT SAFETY INFORMATION: HEARTGARD® (ivermectin) is well tolerated. All dogs should be tested for heartworm infection before starting a preventive program. Following the use of HEARTGARD, digestive and neurological side effects have rarely been reported. For more information, please visit www.HEARTGARD.com.

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