



# Milwood Animal Clinic

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## Essentials for Rabbits

### Basic Rabbit Diet

A rabbit's diet should generally include free-choice hay (Timothy and/or Orchard Grass) fresh vegetables, free-choice water, and a small amount of timothy-based pellets. A diet based on pellets does not provide enough wear for a rabbit's molars resulting in chewing problems. Pellets are also high in calories and can cause obesity. Your rabbit should have a variety of leafy vegetables from this list, and include at least one vegetable a day that contains Vitamin A (indicated by a \*). All fruits and vegetables should be washed before being given to your rabbit.



Beet greens\*

Broccoli leaves and stems\*

Carrot Tops\*(!)

Cilantro

Collard Greens\*

Endive\*

Green Peppers

Mint

Parsley\*

Peppermint leaves

Radish tops

Romaine Lettuce\*

Watercress\*

Bok choy

Brussel sprouts

Celery

Clover

Dandelion Greens and Flowers\*(!)

Escarole

Kale\*(!)

Mustard Greens\*

Pea pods\*

Radicchio

Raspberry Leaves

Spinach\*(!)

Wheat grass\*

(!)=Use sparingly. High in either oxalates or goitrogens and may be toxic in accumulated quantities over a period of time

Other fruits and veggies should be considered treats and only be given occasionally. A high amount of sugar in the diet should be avoided because it may affect their digestive system. The best fruits are ones in the berry family (strawberries, blueberries, raspberries, blackberries). We do not recommend feeding bananas or grapes because they are high in sugar and can become "addicting" to bunnies.



Water should be available in a heavy bowl or water bottle. Studies have shown that rabbits drink better from a bowl than from a bottle.

**\*\* If at any time** your rabbit is losing weight, stops eating, refuses certain items of his diet he previously ate, has a decrease in stool production, stops defecating, or is just not acting right, call your veterinarian **IMMEDIATELY!!\*\***

### **Why is feeding hay important?**

Hay is essential to a rabbit's good health, providing roughage which reduces the danger of hairballs and other blockages. Apple tree twigs also provide good roughage.

### **What quantities of food should I feed babies and "teenagers"?**

- Birth to 3 weeks--mother's milk
- 3 to 4 weeks--mother's milk, nibbles of alfalfa and pellets
- 4 to 7 weeks--mother's milk, access to alfalfa and pellets
- 7 weeks to 7 months--unlimited pellets, unlimited Timothy or grass hay (plus see 12 weeks below)
- 12 weeks--introduce vegetables (one at a time, quantities under 1/2 oz.)

### **What quantities of food should I feed young adults? (7 months to 1 year)**

- introduce timothy hay, grass hay, and oat hays, decrease alfalfa
- decrease pellets to 1/2 cup per 6 lbs. body weight
- increase daily vegetables gradually
- fruit daily ration no more than 1 oz. to 2 oz. per 6 lbs. body weight (because of calories)

### **What quantities of food should I feed mature adults? (1 to 5 years)**

- Unlimited timothy, grass hay, oat hay, straw
- 1/4 to 1/2 cup pellets per 6 lbs. body weight (depending on metabolism and/or proportionate to veggies)
- Minimum 2 cups chopped vegetables per 6 lbs. body weight
- fruit daily ration no more than 2 oz. (2 TBL) per 6 lbs. body weight.

### **What quantities of food should I feed senior rabbits? (Over 6 years)**

- If sufficient weight is maintained, continue adult diet
- Frail, older rabbits may need unrestricted pellets to keep weight up. Alfalfa can be given to underweight rabbits, only if calcium levels are normal. Annual blood workups are highly recommended for geriatric rabbits.

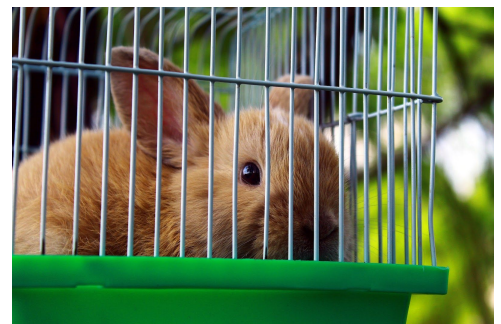
### **If I feed fewer pellets, how do I compensate?**

When you feed a lower quantity of pellets, you must replace the nutritional value without the calories, which is done by increasing the vegetables. Also, a variety of hay and straw must be encouraged all day long, do this by offering fresh hay a couple of times a day.

## **Living Arrangements**

### **Cages**

Rabbits were not designed to live on wire floors – the wire is hard on their feet (which have no pads on them like cats or dogs). If you must use a cage with a wire floor, you need to provide you rabbit with a resting board or rug for her to sit on, otherwise she will spend all of her time in her litter box. You can find cages with slatted plastic floors, which are more comfortable, or you can use a solid floor. As long as your rabbit has a litter box in the corner that he chooses as his bathroom, there shouldn't be much of a mess to clean up. Bigger is better! A cage should be at least 6 times the size of your bunny - more if he is confined for a large amount of the day. You can build your rabbit a two story "condo" with the floors connected by a ramp - they love this!



An untrained rabbit probably should be kept in a cage while you're not at home to supervise and at night when you sleep. Rabbits are crepuscular, which means that generally they sleep during the day and during the night but are ready to play at dawn and at twilight. Be sure to let them out during the evening when you are at home, and if possible, in the morning while you get ready for work. A cage should be seen as the rabbit's "nest". A special place where he can feel safe and secure. Make sure the nest is enjoyable and he will enjoy being there, even when the cage door is open! Keep it stocked with baby toys, a synthetic sheepskin rug, a piece of wood attached to the inside (like a baseboard), and when you put him to bed at night, a nice veggie snack.

### **Rabbits around the house**

When your rabbit is better trained, and when your house (or the part that your rabbit will have access to) has been sufficiently bunny-proofed, your rabbit can be allowed free run of the home (or part of it) even when you are not home. The more room your rabbit has to run around in, the more delightful you will find her as a companion. Even when a rabbit has a lot of room to run around, she may still get bored. A bored rabbit is often a naughty rabbit. If you don't make every attempt to provide your rabbit with lots of entertainment, in the form of boxes, baskets, brooms, sticks, magazines, phone books, grass mats, etc., then she will make her own entertainment in your carpet, behind your couch or under your recliner.

### **Rabbits Outside**

Always supervise your rabbit when she's outside. It takes just a few seconds for the neighbor's dog to jump the fence and attack or frighten your rabbit to death. Make sure that the grass has not been sprayed with pesticides or fertilizers. Check the yard for holes in the fence and poisonous plants. Under no circumstances should rabbits be left outside after dark. Predators are opossums, raccoons, skunks, coyotes, dogs and occasionally cats. If you have an outside enclosure that you feel is very secure, a rabbit can still die of fright while a predator taunts the rabbit from outside.

### **Overall Health**

- You can groom your rabbit with a soft bristle brush or a comb.
- Keep nails clipped to an appropriate length. Regularly check eyes, nose, ears, teeth, and droppings for any abnormalities.
- We recommend you spay your female by 6 months, and neuter your male by 4 months.
- Protect your rabbit from electrical cords, bunnies like to chew!

### **Rabbit-Proofing Your House**

Rabbit Proofing one's home involves three things:

- Preventing destruction of your property
- Protecting your companion rabbit(s) from harm
- Providing safe and fun chewing alternatives for your rabbit(s).

Preventing rabbits from chewing on electrical cords is of utmost importance, since rabbits can be badly burned or electrocuted. The consequences of biting into an electric wire are too severe to risk relying on training alone. Instead, you must take action to move cords safely out of reach. Some ways of doing this:



- Plastic tubing (similar to that used in fish tanks, or with swamp coolers) from a hardware or aquarium store can be slit lengthwise with a blade and the wire can be tucked safely inside. A harder, black, pre-slit type of tubing is also available.
- Decorative gold and wood-grained wire-concealers that stick to the base of walls come in strips, corners, etc, so they can follow the shape of the wall. This is a more costly and time consuming method than the clear plastic tubing above, but is more permanent, and rabbit proof, as well.
- Of course, wires can be run under or behind furniture or carpets in order to hide them.

Other Household furnishings can be a problem for your pet also:

Most houseplants are toxic. Putting them on high furniture may not keep a rabbit away. Hang them from the ceiling if you have an active bunny, but watch for falling leaves! If you are unsure which plants may be toxic, the *House Rabbit Handbook* (Drollery Press) has a complete list of poisonous plants (indoors and outdoors), as do two back issues of *House Rabbit Journal*.

If a rabbit insists on chewing baseboards, edges of chairs, etc., a board can be put over the places of temptation, making them inaccessible while also providing an acceptable chewing surface. This method should be combined with training your rabbit not to chew on these items.

Rabbits can't resist digging at the end of "tunnels" (any place that furniture forms a narrow path to a wall). Lay a piece of wood or hard plastic at the end of the tunnel, holding it down with the furniture on either side to protect the carpet. You can also place a tub full of hay, shredded newspaper, or a phone book, here as well for bunny to dig in.

Upholstered furniture and beds that are several inches off the ground are wonderful places for rabbits to hide underneath. However, some will burrow into the soft underside and make a nest. A flat cardboard box or frame of 2x4's, smaller than the area of the future base, will keep the rabbit out, and won't be seen from human level.

Rabbits chew to exercise their minds, not just their teeth. Provide lots of entertaining alternatives for your bun to chew on. If she enjoys chewing a hole into the back of the couch, provide her with a closed cardboard box filled with paper or straw, with a small hole in it to start, and let her finish the job. Be imaginative!

## Litter-Training Your Bunny

By nature, rabbits choose one or a few places (usually corners) to deposit their urine and most of their stools (pellets). Urine-training involves little more than putting a litter box where the rabbit chooses to go. Stool training requires only that you give them a place they know will not be invaded by others. Here are some suggestions to help you to train your rabbit to use the litter box.



**Age** Older rabbits are easier to train than younger rabbits, especially babies. A rabbit's attention span and knack for learning increases as they grow up. If you have a baby, stick with it! And if you are deciding whether to adopt an older rabbit, or litter-train you older rabbit, go for it!

**Spay/Neuter** When rabbits reach the age of 4-6 months, their hormones become active and they usually begin marking their territory. By spaying or neutering your rabbit, he will be more likely to use his litter box (as well as be much healthier and happier).

**Types of litter** House Rabbit Society recommends organic litters made from alfalfa, oat, citrus or paper. Some brands to look for are Care Fresh, CitraFresh, Cat Works, Cat Country, and Critter Country. Stay away from litters made from aromatic soft woods, like pine or cedar



shavings or chips, as these products irritate the respiratory system and are thought to cause liver damage to rabbits. Another approach is to place a handful of hay in each box, or to simply use hay as litter. Obviously, you need to change the hay fairly frequently (daily), since your rabbit will be eating it.



**Cleaning and Disposal** Clean litter boxes often to encourage your rabbit to use them. Use white vinegar to rinse boxes out - for tough stains, let pans soak. For this reason it is wise to have an extra pan to switch out. Accidents outside of the cage can be cleaned up with white vinegar or club soda. If the urine has already dried, you can try products like “Nature’s Miracle” to remove the stain and odor. To dispose of organic litters, they can be used as mulch, or can be composted. Rabbit pills can be directly applied to plants as fertilizer.

**The cage** Use a cage large enough to contain a small litter box (along with bunny’s food and water bowls, toys, etc.) and still allow enough room for the rabbit to stretch out. With a litter box in the cage, when the rabbit is confined to his cage when you’re not home, cage time is learning time.

**Stool vs. Urine** All rabbits will drop stool pills around their cages to mark it as their own. This is not failure to be litter-trained. It is very important for your rabbit to identify the cage as her property so that when she leaves the cage for the bigger world of your house, she will distinguish the family’s area from her own and avoid marking it. To encourage this, make the rabbit the king of his cage. Try not to force him in or out of it - coax him. Do not do things to his cage that he doesn’t like, or things to him that he doesn’t like while he’s in his cage.

**The running space** Even if your goal is to let your rabbit have full run of the house, you must start small. Start with a cage and a small running space, and when your rabbit is sufficiently well-trained in that space, gradually give her more space. But do so gradually! If you overwhelm her with too much freedom before she’s ready, she will forget where her box is and will lose her good habits.

**The method** Start with a box in the cage, and one or more boxes in the rabbit’s running space. If she urinates in a corner of the cage not containing the box, move the box to that corner until she gets it right. Don’t be concerned if your bunny curls up in her litter box - this is natural. Once she’s using the box in the cage, open her door and allow her into her running space. Watch her go in and out on her own. If she heads to a corner where there is no box, or lifts up her tail in the characteristic fashion, cry “no” in a single, sharp burst of sound. Gently herd her back to her cage and her litter box, or into one of the boxes in her room. Be careful, however. You don’t want to make the cage or the litter box seem like a punishment. A handful of hay in the box makes it a more welcoming place. After she uses the box in her room a couple of times, you’re well on your way, as her habits will be on their way to forming. As she gets better trained in her first room, you can increase her space. Don’t hurry this process. And if the area becomes very big, or includes a second floor, be sure to include more litter boxes, so as not to confuse her. Remember, as she becomes more confident and uses fewer boxes, you can start to remove some of her early, “training” boxes. Get your rabbit into a daily routine and try not to vary it.

**How many litter boxes?** The more, the merrier, especially if your rabbit is a bit of a slow learner, or is especially obstinate about where she wants her box(es) to go. As her habits improve, you can decrease the number of litter boxes.

**Special Problems** Some rabbits love to kick their litter out of the box. You can get a covered litter box (with a hood) to help solve this problem. You can also try experimenting with different litters. A second problem is that rabbits often back up so far into the box that the urine goes over the edge. Again, covered litter box can solve this problem. Another solution would be to get a dishpan or other type of tub with much higher sides. Still another solution would be to get a “urine guard” to place around the back of the cage, to keep the litter from spraying outside of the cage.

**Compromise** If your rabbit continually urinates in a spot where there is no litter box, put his box where he will use it, even if it means rearranging his cage or moving a table in the living room. It is much easier to oblige him rather than to try to work against a determined bunny!

## Preventing Dental Disease in Rabbits

### Anatomy of Rabbit Teeth

Rabbits are herbivores that are designed to eat a diet comprised of a wide variety of vegetation from succulent to tough, dry material. All of the rabbit's teeth grow continuously throughout its life to compensate for the pronounced wear created by long periods of chewing on abrasive foods. This constant growth can lead to tooth deformities and overgrowth. Some cases of dental disease in rabbits can be prevented.

**Diet-** Your rabbit should be fed a diet of unlimited grass hay and a good amount and variety of fresh leafy greens daily. Avoid feeding an exclusive diet of commercial pellets. In addition offer other items to chew upon such as fresh tree branches (from trees that are NOT sprayed with chemicals), untreated wood pieces and unvarnished, unpainted wicker baskets. Providing a healthy diet will ensure adequate wear of all the teeth. **IT IS NEVER TOO LATE TO CONVERT A PET TO A HEALTHY DIET.** A natural diet has a myriad of benefits beyond just good teeth; it is literally the foundation for good health.

**Examinations at Home** - Be familiar with the appearance of your pet's teeth. You will only be able to see the incisors, but take a good look at least once a month. Your veterinarian or experienced rabbit friend can help show you how to perform the exam. Report any changes in shape, color or texture of the teeth to your veterinarian as soon as possible.

**Veterinary Examinations** - As mentioned, your veterinarian should examine your pet at least once a year. Part of a thorough physical examination on a rabbit is a dental exam. **Merely examining the front teeth is not sufficient.** Cheek teeth may have early disease that will be missed so the entire mouth needs to be examined.



# Why You Should Spay or Neuter Your Rabbit

By Margo DeMello

**1. Altered rabbits are healthier and live longer than unaltered rabbits.** The risk of reproductive cancers (ovarian, uterine, and mammary) for an un-spayed female rabbit stands at approximately 85% and is virtually eliminated by spaying your rabbit. Your neutered male rabbit will live longer as well, given that he won't be tempted to fight with other animals (rabbits, cats, etc.) due to his sexual aggression.

**2. Altered rabbits make better companions.** They are calmer, more loving and dependable once the undeniable urge to mate has been removed. In addition, rabbits are less prone to destructive (chewing, digging) and aggressive (biting, lunging, circling, growling) behavior after surgery.

**3. Avoidance of unwanted behavior.** Unneutered male rabbits spray, and both males and females are much easier to litter train, and remain more reliably trained, after they have been altered.

**4. Altered rabbits won't contribute to the problem of overpopulation of rabbits.** Over 15 million adorable dogs, cats and rabbits are killed in animal shelters in this country every year. In addition, unwanted rabbits are often abandoned in fields, parks, or on city streets to fend for themselves, where they suffer from starvation, sickness, and are easy prey to other animals or traffic accidents.

**5. Altered rabbits can safely have a friend to play with.** Rabbits are social animals and enjoy the company of other rabbits. Due to sexual and aggressive behaviors triggered by hormones, it is not advised to have a companion of either sex for your rabbit until they have been altered.

\*Surgery can safely be performed on male rabbits as soon as the testicles descend (3-4 months) and for females, 6 months.



Above information provided by House Rabbit Society: [www.rabbit.org](http://www.rabbit.org)

## Suggested Reading

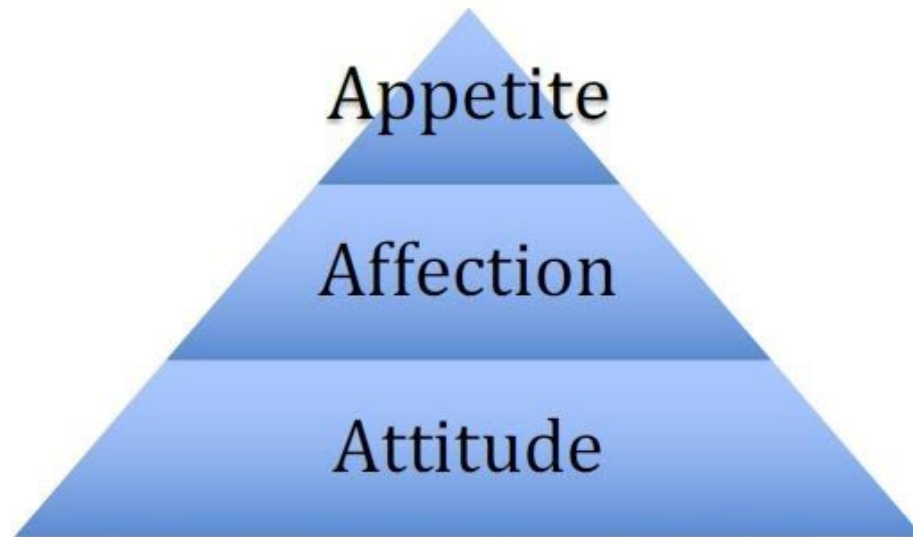
- House Rabbit Handbook - written by Marinell Harriman
- House Rabbit Society Website - [www.rabbit.org](http://www.rabbit.org)

# **Rabbit Gastrointestinal Syndrome: A Rabbit Owner's Perspective On When to Seek Veterinary Treatment**

by Dawn Sailer

As a House Rabbit Society educator, I know that when one of my rabbits presents with decreased appetite or anorexia, it is a potentially life-threatening situation. These are some of the clinical signs and symptoms of rabbit gastrointestinal syndrome (1), which is a term that covers any interruption in the normal function of the GI tract. There are many causes of GI dysfunction, and while some may be due to stress, discomfort or other relatively minor conditions, and some can be life threatening, for example, an actual obstruction of the stomach or intestines. The owner plays a very important part of diagnosis and treatment, and outcomes are always better when rabbits present to the veterinarian early when the patient is still medically stable. Many owners struggle with the appropriate time to bring to their rabbit to the veterinarian, so I am sharing the criteria I use to determine when to call the veterinarian.

Amy Remnaraine, a House Rabbit Educator, published an article to help determine rabbit quality of life at end of life and uses 3 primary criteria: appetite, affection and attitude (2). For a rabbit presenting with decreased appetite or anorexia, I utilize the same criteria to determine when to call a veterinarian (Figure 1).



**Figure 1: Objective Criteria to Determine When to Call a Veterinarian**

If one of my rabbits presents with an abnormal appetite (the apex of the pyramid), I offer their favorite foods. If they eat, I chalk them up to being fussy and clearly will not call the veterinarian. If they will not take their favorite foods, I go to the middle level of the pyramid and assess their affection.

I define affection as their relationship with me and/or their relationship with their rabbit buddies (all of my rabbits have buddies). If there is no change in their level of affection, I will not call the veterinarian immediately, but continue to monitor them very closely. If abnormal appetite continues for 2 meals (e.g. turned their nose up at pellets for breakfast and will not dive into their greens for dinner) with no change in affection, I will call the veterinarian and have the rabbit



seen within 24 hours of missing the last meal. However, if a rabbit becomes less affectionate with me and/or their bunny friend(s), there is cause for concern and I will go to the base of the pyramid and assess attitude.

Attitude is the rabbit’s overall personality and interaction with his/her environment. If a rabbit is hiding, withdrawn, eyes are sullen, has a major change in personality (e.g. allowing me to pick them up without a “fight” where they would give me a run for their money if they were well), I call the veterinarian immediately and bring the rabbit in as an emergency.

In conclusion, when a rabbit skips a meal, the loss of appetite itself is not an immediate cause for concern. There are more subtle indicators of ways your rabbit interacts with you and their environment which determine whether skipping a meal is a true emergency.

Table: Another Visual of Objective Criteria to Determine When to Call a Veterinarian

<b>Symptom to Evaluate</b>	<b>Results</b>	<b>Call the Veterinarian Immediately (Y/N)</b>
Appetite	Will only eat favorite foods, but rejects some food	N, will monitor for continued trend
	Will not eat treat or favorite food	See affection
Affection	Interacts with owner and/or bunny friends just like normal	N, will monitor very closely especially if they will not eat anything. Call veterinarian after 2 missed meals and make an immediate appointment
	No interaction with owner or bunny friends	See Attitude
Attitude	Sullen, withdrawn, hiding	Y, call the veterinarian and bring in immediately if abnormal appetite, affection and attitude
	Has normal attitude	N, assuming affection is normal Y, if appetite and affection are abnormal

(1) Lichtenberger M1, Lennox A., “Updates and advanced therapies for gastrointestinal stasis in rabbits.”Vet Clin North Am Exot Anim Pract. 2010 Sep;13(3):525-41

(2) Remaraine, A, “End of Life,” <http://rabbit.org/end-of-life/>

## CASE EXAMPLE: Lilian

Background: Lilian is a spritely rabbit that asserts herself with other rabbits, she is the QUEEN. Lilian will accept pets from me, but when she has other things to do, she will hop off. She is bonded to Liam, they have a deep bond. Lilian is fine cuddling with Liam or lying somewhere in close range so that she can see Liam. He is always in her sight. Lilian will allow me to pick her up, but she will give me a run for my money capturing her. She is also very tense when picked up.

On December 29, 2017 at 9:00 am, Lilian and Liam sat up for their Oxbow peppermint treats; Liam took his treat while Lilian refused. I tried other varieties (carrot and dill, apple banana, veggie, timothy) and Lilian would not take any. I feed the rabbits their Oxbow pellets; Liam dove in and Lilian hopped away and hid in a hidey box. **Note: We are at level one in the pyramid: Appetite.**

Lilian is a “sneak” eater, hovering over her is not going to get her to eat. Because of this trait, I went to run a few errands. I arrived home at 11:30 AM and Lilian had not touched her pellets. **We are now at the middle layer of the pyramid: Affection.** Lilian was hiding in a box with her nose in the corner, Liam was lying on the other side of the room. I reached out to pet her and she let me pet her for a few minutes. This is a major change in behavior over 2.5 hours. **Now we consider the bottom layer of the pyramid: Attitude.**

Lilian was sitting hunched up, her eyes were half closed, which indicates pain. Lilian then let me pick her up to assess her, which is very uncharacteristic for her.

Lilian’s loss of appetite, sitting hunched up with half closed eyes, coupled with her atypical interactions constituted an emergency. I immediately called the veterinarian and she was seen immediately.

Results: Lilian had an intestinal obstruction which was successfully treated, and she was back home in less than 24 hours. Dawn’s careful observations allowed Lilian to receive treatment early, before she became extremely sick, and her chances would have been much poorer.



Above information provided by Avian & Exotic Animal Clinic of Indianapolis:  
<https://www.exoticvetclinic.com/>