

RABBIT CARE

Safe handling and restraint

Approach by stroking the top of bunny's head. Do not offer your hand for the rabbit to sniff as this gesture is offensive and the bunny may attack.

Rabbits do not appreciate the tips of their noses or chins being touched.

A frightened poorly secured rabbit will be at great risk of a potentially fatal injury e.g. spinal fracture. Use a firm grip over the loose skin around the neck and support the hind limbs.

Accustom your rabbit to being handled by several adults and children of both sexes

Feeding Rabbits

Rabbits have a unique digestive system (they are known as hindgut fermenters) developed to suit a low protein, low energy, high fibre diet consisting mainly of hay/ grass.

It is important not to feed your rabbit with a diet that is too rich and contains insufficient roughage. Commercial foods are often too low in fibre and too high in protein, fat and energy. Rabbits like to graze. Feed them coarse grass or hay.

Fibre is essential as it stimulates the guts and protects against diarrhoea.

If you feed your rabbit only pellet food, the rabbit gains all its energy requirements in a very short time period and will not feed further. This can lead to boredom as wild rabbits enjoy grazing and spend most of the waking hours feeding. Feeding too much of a 'concentrate' diet can also lead to dental disease due to lack of normal wear. Many rabbits are selective eaters and will leave the fibrous components of a commercial mix gorging on the grains and pulses. These favourite items are low in calcium and this can lead to bone and dental disease.

The best diet is grass and good quality hay (e.g. timothy grass hay). Make sure the hay is fresh and sweet smelling as old hay tends to be low in calcium

Fruit and vegetables should be offered daily (at room temperature) and can be seen as a treat. These should consist of about 20 % of the diet with the veggies making up most of this. Anything green and leafy is loaded with vitamins and is a good supplement. Variety is the key so offer small amounts of several items.

Water should be available at all times.

A small amount of good quality high fibre (18-24%) commercial diet can be given (no more than 1/8 cup per 2kg body weight), but if your rabbit selects certain parts of the meal then don't throw the rest away. Offer a small portion and leave the discarded ingredients in the bowl until they are eaten. An alternative is to feed a pelleted food, as the rabbit is unable to select its favourite piece! (Burgess' Suprium" is excellent)

Using a portable run allows your rabbit access to medium length grass (untreated). Sudden changes in diet should be avoided, as should frosted or mouldy food and lawn mower clippings. Introduce the rabbit gradually to the grass allowing it no more than 10 minutes grazing at first. Then increase the time gradually day by day.

Rabbits can become overweight if fed a lot of high calorie treats. Severe problems occur if rabbits are offered sweet treats since their digestive system is not designed to cope with high calorific food.

Rabbits process their high fibre food twice; at night soft mucous covered faecal pellets are produced and eaten directly from the anus. This allows absorption of nutrients such as vitamin B and amino acids and the digestion of previously undigested foods. A food item thus passes twice through the digestive tract in 24 hours. Fat rabbits are unable to reach these pellets and often, as a result, end up with severe soiling of their bottoms and "flystrike".

Housing your Rabbit

Rabbits can be kept both in, and out of doors.

Hutches

Hutches from pet shops are usually too small as the sole accommodation. Rabbits housed in such a way (without access to exercise) will become bored, depressed and obese.

It is essential for a hutch to have a dry draught-free secluded area and a larger area for exercise. A solid-fronted nesting area and mesh-fronted living area are usually provided.

A hutch should be as large as possible with at least sufficient room for the rabbit to stretch up fully on its hind limbs and to stretch out. If confined to the hutch for prolonged periods the rabbit should be able to perform at least three hops from one end to the next. If space is a problem then construct a two or three story apartment with well-secured ramps.

Outdoor hutches should be raised off the ground and protected from wind and rain. A felted roof sloping toward the back is suitable. Direct sunlight should be avoided as heat stress and stroke can occur easily in rabbits. However sunlight is good for developing strong bones. Place the hutch so the rabbit gets the sun in the morning or evening. In bad weather provide insulation by throwing an old blanket or carpet over the hutch. Avoid placing hutches in wind tunnels between houses!

The rabbits sleeping areas should be off the ground for insulation and enclosed to ensure it is totally out of sight of any potential predator.

Bedding must always be provided: a layer of newspaper or shavings plus straw.
Water bottles and feeding bowls should be made of glass, ceramic or metal.
Hay can be provided loose or in racks.

Clean hutches at least once a week. Soiling can lead to foot problems and high ammonia levels to respiratory disease.

Outdoor rabbits should be checked and handled every day. In the summer caking of faeces or sitting in wet bedding can rapidly lead to fly strike.

Exercise

An exercise area is essential. A mobile run, ark or permanently fenced areas are all acceptable. Cover any pen with a mesh top to prevent rabbits jumping out. Rabbits can dig deep burrows so watch for escapees in fenced areas. Sinking wire mesh well below ground level can foil these habits.

As they are natural prey animals rabbits should be provided with boltholes such as empty cardboard boxes to use if alarmed.

Watch for natural predators, wild rabbits and fly and mosquito control. A shed or garage is an alternative during particularly bad weather.

House rabbits

When living indoors your rabbit will still need a secure cage for when you are absent. Indoor kennels for dogs with mesh sides and plastic trays are ideal. Avoid wire floors. For psychological security a cardboard box lined with straw or a synthetic fleece can be added to the cage. Place toys and

things to chew in the cage so that bunny can enjoy being in there even when the door is open. When you put your rabbit to bed at night give him/her a vegetable or fruit snack.

Exercise around the house should be encouraged. Rabbits naturally urinate and defecate in one place and thus are easily trained to use a litter tray by repeatedly placing them in the tray on acquisition. Placing some droppings in the tray can help. Choose non-toxic, dust free and absorbent litter. Wood or paper based litter base should be used. Other types may cause gastrointestinal problems. Access to sunlight is also necessary. Electrical cables must be protected from chewing to prevent electrocution and poisonous houseplants avoided. Cables that run across the rabbit's path or through a burrow-like area are particularly tempting. Encase them in heavy-duty plastic tubing and block runs behind furniture. Chewable toys are enjoyed e.g. cardboard boxes, telephone directories commercial cat or bird toys.

If your bunny insists on chewing skirting boards, legs of chairs etc condition the rabbit to stop and provide an alternative such as root veggie or edible wood. A slap on the floor next to a misbehaving rabbit and a firm 'no' may work, (thumping is a sign rabbits recognize).

Training your Rabbit

Rabbits love to chew and dig. They enjoy communicating and have a social structure, as seen by rabbits, in which all members of the family are in the pecking order.

Deterring chewing

Immediately offer as many alternatives that are safe to chew as you can. Provide something with a similar taste and texture. E.g. edible wood such as an apple branch instead of a chair leg. Block whatever it was chewing so it ceases to be a temptation.

Deterring digging

Provide your rabbit with a digging box.

This can simply be a cardboard box sealed at the ends with a hole cut in one of the longer sides. The rabbit will go in and turn so its body runs the length of the box and the digging material will be flung against the sealed end of the box and remain contained. Use something totally dust-free and safe in the digging box such as paper or straw. Rabbits will quickly learn how to use it rather than the carpet.

Toilet training

Wild bunnies are naturally clean animals and choose to use separate latrine areas a short distance away from their burrows.

Toilet training of domesticated bunnies is usually very easy. It merely involves putting a litter tray where the rabbit chooses to toilet. This tends to be close to the feeding bowl.

If necessary, confine the rabbit in a run or indoor cage with food bowl and litter tray near each other. You may need to place some droppings in the tray.

Gradually enlarge the available area for activity as the habit becomes established.

Trays with high sides may be necessary as rabbits often kick litter out the tray.

In a large outside run, rabbits will often automatically designate one corner as the toilet area and only graze other areas.

If your rabbit stops using the litter tray or toilet area it may be due to urinary tract infections, bladder stones or kidney disease. Seek veterinary advice in this situation.

At puberty (around 4-6 months) problems may arise when hormones become active and rabbits may start territory marking with both urine spraying and strategic depositing of droppings. Neutering prevents this. This problem is more likely to occur in multi-rabbit households.

The introduction of a new rabbit may also lead to territory marking which will often subside once they have established a stable relationship.

Choosing Litter

Rabbits will spend a lot of time on the litter tray and will also nibble some of it. Mineral or clay-based types should be avoided. The former can be toxic, irritant and dusty. The latter can swell up to several times its original size in your rabbit's stomach.

Wood or paper based litter pellets are much more suitable. Buy only litter recommended for rabbits.

Companions: More than one Rabbit

Rabbits are social animals. In the wild they live in warrens in family groups.

Many pet rabbits are kept alone, in almost complete solitary confinement becoming bored and depressed.

The need for companionship can be partially met by humans but is not quite the same as two bunnies together. Bonded pairs are rarely out of each other's sight and interact constantly with sounds and movement.

Pairs are much easier to look after, tend to get into less trouble and tend to relate to people better. If you decide to buy two try to buy two that are already bonded. Littermates can be kept together. Un-neutered rabbits of the opposite sex should never be with one another unless you are intent on breeding. Neutering makes for smooth introductions and better long-term relationships whatever combination is chosen. Unrelated females may fight. Intact bucks **will** fight.

Do not house more than one male with a single female or two males where they can smell un-neutered females.

Rabbits are often kept with guinea pigs but this is not always advisable because bullying can occur. If you do decide to keep them together then the guinea pig needs to be given an area that is inaccessible to the rabbits. Rabbits can harbor *Bordetella bronchiseptica*. This is pathogenic to guinea pigs.

On initial introduction of two rabbits 100% supervision is necessary in order to observe and stop any hostility. Once through the introductory phase they will usually become devoted to each other. Introduce them on neutral territory. Never put a male or female into another female's territory as they will fight.

Companionship for single rabbits

If you only have one rabbit take time to play with him/her. While you are away from home your rabbit will need activities to stop boredom. Remember boredom can lead to destructive behaviour or depression. Bunnies preferred playtimes would be in the morning and in the evening. They tend to sleep during the day.

Playtime toys for rabbits

Toys will keep your rabbit interested in its surroundings and activities will keep it in shape and prevent obesity.

- Paper bags and cardboard boxes for crawling inside, scratching and chewing. Rabbits will enjoy the boxes more with at least two entry points into the box.
- Boxes full of shredded paper, junk mail (minus the wrapping), magazines with the staples removed or straw for digging in.
- Cardboard rolls
- Pieces of edible wood such as pear, apple, willow and hazel.
- Telephone directories for shedding
- Carrots or root vegetables suspended on string
- Toys with ramps and lookouts for climbing on and viewing the world.

Indoor playtime

- Once your rabbit is trained and your house is rabbit-proof then let the rabbit run around supervised.
- The more room your rabbit has, the more fun he will have.
- However he can still get bored and become naughty.
- Make sure you entertain him and provide him with toys or other bunnies to play with.
- He may otherwise make his own entertainment with your belongings.

DENTAL DISEASE IN RABBITS

The classic picture of a rabbit for most people is the goofy buck-toothed Bugs Bunny of Disney fame or Dylan from the Magic Roundabout. While these seem healthy cartoon characters, rabbits with teeth which do not meet or which have poor enamel, are in a dangerous state. The rabbit's teeth grow throughout life and so incisor (front) teeth that do not wear each other down will grow until the upper ones bury themselves in the lower jaw gums and the lower ones poke way out of the mouth. A rabbit like this cannot eat or groom. If the molars or cheek teeth do not meet properly they wear unevenly, causing sharp spikes to form. These erode at the gums causing painful ulcers, again stopping the animal from feeding or grooming. The importance of continual food intake in rabbits is central to health, while grooming is essential to prevent problems like fly strike. Thus well-functioning teeth are absolutely essential to a rabbit's continuing well-being.

Why, you might ask, do these teeth grow abnormally?

One of the main reasons is that the bones of the jaw do not form properly due to deficiencies in calcium and other minerals. But, you say, I give my rabbit all the food he could possibly want, and a wide variety of different food.

How can he have a dietary deficiency?

The problem is that, by giving your rabbit a big bowl of different foodstuffs, he can choose to eat only what he finds tasty. It is the less appetising items which often contain the minerals he needs. So give a small amount of rabbit mix or pellets as well as some greens and plenty of good-quality (ideally Timothy) hay so that he has eaten all the dry food by the time he has his next feed.

You and your vet can assess the quality of your rabbit's teeth by looking at the enamel surface. This should be smooth and shiny and not chipped or with an irregular surface.

Overgrown incisors should be shortened but this needs to be done regularly since the teeth keep growing. Vets used to clip rabbits' teeth with nail clippers but occasionally this damaged the teeth or gums. These days most vets seeing a large number of rabbits use dental burrs to file down the incisors. Treating poorly-aligned molar teeth is more difficult but filing rather than clipping is considered optimal today. One long-term solution is to remove upper and lower incisors, a relatively simple operation. Although this sounds drastic it is without doubt the best long term solution to the problem.

FLY STRIKE IN RABBITS

During the summer months, pet rabbits may be affected by maggot infestation. Different terms are used for this but fly strike is a common one. Another is to say that the rabbit is fly blown. The technical term your vet might use is miasis. Healthy rabbits are generally not affected by fly strike. There are three main problems that lead to the condition. First, a wound to which the flies are attracted and on which they lay their eggs is an obvious site where maggots can cause damage. More commonly, a rabbit that cannot, or does not feel like turning round to groom itself will quickly have matted and soiled fur around its anus. This, from the fly's point of view, is an ideal opportunity to lay eggs. When the maggots hatch if the rabbit cannot groom itself these fly larvae survive, spread and may cause a tremendous amount of damage as they eat through the tissues. Thirdly, damp bedding is an ideal environment for egg-laying and maggot growth and development.

Ensuring your rabbit is not prone to fly strike

The key factors in preventing fly strike are to ensure that bedding is dry, that the rabbit does not have any wounds or ulcerated areas of skin and that there are no problems to prevent him grooming. What are these likely to be?

Dental disease can cause inability to groom. An animal which has sharp hooks on its molar or cheek teeth will not want to groom since these hooks cause pain when the rabbit extends its tongue to groom in the normal manner. Similarly, overgrown incisor teeth (at the front of the mouth) will impede grooming. Your rabbit's teeth should be checked regularly by your veterinary surgeon and appropriate treatment given if necessary.

Rabbits with back problems may not be able to turn round to groom properly. Any rabbit with diarrhoea will be especially prone to fly strike, and will have many other problems associated with the diarrhoea. Such a condition is an emergency for the rabbit far more than for a dog or cat (unless a puppy or kitten when, again, it is a major problem).

Treatment for fly strike

The animal will need to be sedated or anaesthetised so that all the maggots can be removed and the whole area well disinfected with an antiseptic solution. Your rabbit will need antibiotics since there is a major probability of secondary bacterial involvement. In severe cases intravenous fluids and steroids may be needed. In such cases your rabbit will be hospitalised and kept warm and comfortable, probably with a heat pad or an overhead infrared light. Such intensive care may cure your rabbit of the maggot infestation but in severe cases extensive surgery may be needed to remove all the dead maggot-ridden tissue. This can be a long, quite risky and often expensive treatment and after all that it will still be necessary to overcome the original problems which led to the fly strike. Sometimes the damage is too severe and euthanasia is the only kindest option.

In conclusion: preventing fly strike

The preferable option is to take your rabbit to the veterinary surgeon maybe twice yearly for a routine health check, to ensure that dental disease or back problems are not predisposing your rabbit to this dangerous condition. Giving him/her dry and well aired housing is an ideal, cheap and easy way to minimise the possibility of fly strike.

INFECTIOUS DISEASES OF RABBITS

Two serious diseases caused by viruses are very common in rabbits. They are **myxomatosis** and **viral haemorrhagic disease** and every pet rabbit should be vaccinated against them. Because they are viral diseases there are no effective treatments once the rabbit is infected.

Myxomatosis

This is caused by the myxoma virus which is widely distributed in the wild rabbit population. You might argue that your rabbit never comes into direct contact with animals from the wild and so does not need vaccination. The problem is that the virus is carried by rabbit fleas and mosquitoes so the disease can be passed on without direct contact. The incubation period is two days to a week and the first sign is the development of puffy eyelids and a purulent (pus-producing) conjunctivitis. Swelling under the skin extends around the eyes, ears and genital region. Death is usually 18 days to three weeks after infection but occasionally animals will survive and signs regress over three months.

Pregnant animals should not be vaccinated, nor rabbits under six weeks old. Occasionally there is a local reaction at the injection site but compared with the lethal infection seen of many unvaccinated animals this is insignificant. In the UK Intervet produce Nobivac Myxo which is a living vaccine prepared from a related virus, the Shope papilloma virus, which does not cause clinical disease.

Viral haemorrhagic disease

This was first noticed in China many years ago but now has an almost world-wide distribution and is seen more and more in the UK. Viral haemorrhagic disease is caused by a calicivirus and, although the incubation period is up to three days, animals may die suddenly without any clinical signs. If there are signs they include anorexia (not eating), pyrexia (fever) apathy and prostration. There may be convulsions and coma, dyspnoea (difficulty breathing), a mucoid foaming at the mouth or a bloody nasal discharge. Some animals survive this acute phase but die a few weeks later of liver disease and jaundice.

Given the horrendous death experienced by affected rabbits, every rabbit should be vaccinated annually or even every six months in areas where the disease is rampant.

In the UK two vaccines are marketed, Cunical by Merial which should be used every six months or Cylap HVD by Willows Francis, which is recommended to be used every 12 months.

Common Bacterial Diseases of Rabbits

Pasteurella multocida

Pasteurella is a bacterium which commonly causes abscesses and inflammatory disease in rabbits. It can infect the nasolacrimal (tear) duct, and can cause abscesses of with tooth roots, skin or internal organs. A very common problem associated with the organism is upper respiratory tract infection causing snuffles. Indeed it may be that most rabbits have this organism in their noses but the immune system keeps it at bay. Only when the rabbit is under stress can the bacterium start to cause overt clinical problems. Treatment may include antibiotics but these do not penetrate well into the pus produced by Pasteurella infection. Also, rabbits do not take particularly kindly to antibiotics since they upset the delicate balance of normal bacteria in their gut, so vital for digestion.

Surgery is possible if the abscess is in or under loose skin but abscesses in the middle ear (causing balance problems), in the eyeball (causing blindness) or in the internal organs, are less easy to treat.

Surgical treatment involves the careful sterile dissection and removal of the abscess and surrounding tissue. It can only be successfully accomplished in simple intact abscesses. Recurrence is common.

Because some form of stress probably triggers clinical disease, it is important to keep your rabbit as healthy as possible and this will mean taking him or her to vet at least once a year for a thorough general examination.

No vaccine is currently available for the prevention of disease caused by this organism in rabbits.

E cuniculi

In recent years, another major health problem in pet rabbits has emerged:

Encephalitozoon cuniculi.

E.cuniculi is highly infectious and many rabbits are already infected from their mother when they leave the breeder or pet shop.

The disease can remain latent for many months or years and signs can flare up suddenly or develop slowly. Symptoms include urinary incontinence, seizures, paralysis and eventually coma.

There is a new treatment available called **Panacur Rabbit** which is recommended daily for 9 consecutive days, 2-4 times a year.