HANDBOOK ON RABIES

What is rabies?
Rabies is a viral disease that affects the nervous system of mammals. In the last stages of the disease, the virus moves from the brain into the salivary glands and saliva. From there the virus can be transmitted through a bite or by contact with mucous membranes (nose, mouth, and eyes). It is fatal once symptoms occur.

What are the major carriers of the disease?
Rabies is predominantly a disease of wild carnivores but it can affect all warm-blooded animals, including humans.

How is it transmitted?
Rabies is caused by rhabdovirus - a large enveloped bullet-shaped DNA virus. It is very sensitive to heat, light detergents (including ordinary soaps) and disinfectants and cannot survive for long outside the body of an infected animal.

The virus is carried in the saliva of an infected animal. It is not carried through simple contact or through the air. It cannot penetrate intact skin. Nor will licking transfer it. The virus multiplies in the muscle at the site of the wound and then spreads, not in blood but along nerve fibres into the spinal cord and brain. Growth in the brain and cord cause severe nervous disease and death. The virus also spreads from the brain along other nerves to organs including the salivary glands - large amounts of virus are produced and excreted in saliva. This is after the saliva comes in contact with a scratch, abrasion, or open wound in the skin. Bites in general are high-risk exposures. Bites to the head and neck carry the highest risk. Animal contact by itself, such as being in the vicinity of, petting or handling an animal, or coming into contact with the blood, urine or feces of an animal does not constitute exposure and, therefore, does not require post-exposure rabies treatment.
Who can spread rabies?

The rabies virus can infect any mammal, but infection is most common among certain mammals such as dogs, cats, cows, horses, bats, skunks, foxes, racoons. Rabies can also be spread by animals eating the carcass of infected animals.

Is rabies curable?

No. Once the symptoms appear the disease is usually considered to be fatal.

What are the signs and symptoms of rabies in animals?

Symptoms of rabies in animals may include any one or more of the following signs: very excitable, vicious attacks, biting, agitation, restlessness, aggressiveness, lack of fear, excessive salivation, aversion to water, unable to swallow or drink, dilated pupils, muscular dysfunction, coordination or gait irregularities, paralysis, convulsions and eventually death within 10 days. These symptoms are referred to as furious rabies.

Some rabid animals do not exhibit typical rabid symptoms. These are generally referred to as dumb rabies. These animals may display other symptoms of general illness which may include an avoidance of contact with humans or other animals, lethargy, loss of appetite and eventually death. Some dogs just howl for days, retreat into dark corners. The hind legs give way.

Signs and symptoms of rabies in animals vary greatly. A rabid animal may exhibit a number of classical signs of the disease. Sometimes the dog shows no signs at all and is suddenly found dead, and a post-mortem examination may reveal rabies. A dog may show very mild symptoms of anorexia and listlessness only, and is found dead in three or four days.

Are these symptoms characteristic of rabies only?

Unfortunately not. Extreme pain, fear or confusion can make an
animal aggressive. Salivation and the inability to swallow can be seen in cases of obstruction in the throat, foreign bodies in the teeth or due to the ingestion of certain irritant substances. Howling could be due to hunger or pain. In any case, such animals should also be approached with caution as in their pain they may attack.

What are the symptoms of rabies in humans?
Early symptoms include irritability, headache, fever and sometimes itching or pain at the site of exposure. The disease eventually progresses to paralysis, spasms of the throat muscles, convulsions, delirium and death. It is important to note that once symptoms appear, rabies cannot be successfully treated.

How soon after infection do symptoms appear?
The incubation period, that is the time between exposure and the onset of symptoms, is variable but is normally 3 to 8 weeks.

When and for how long is a person able to spread rabies?
Person to person transmission is extremely rare, however, precaution should be taken to prevent exposure to the saliva of the diseased person.

What is the treatment for exposure to rabies?
The best protection against rabies is by vaccination of pets. The most effective rabies prevention is immediate thorough cleansing of the animal bite or scratch wounds with liberal amounts of soap and water or flushing the mucous membrane with warm water. If the wound is bleeding profusely, apply digital pressure or apply a pressure bandage.

This is followed by the administration by an injection of rabies immune globulin (dosage dependent on weight) and five doses of human diploid cell rabies vaccine and administered in the arm on days 1, 3, 7, 14 and 28 after exposure. Rabies injections are no longer given in the
stomach muscles. The first injection is an antibody to fight the virus, and the rest of the injections are a vaccine to ensure long lasting protection. A tetanus toxoid injection should be taken within 24 hours. Also take the first dose of rabies vaccine (Rabipur-Hoechst or Merieux inactivated rabies vaccine - Serum II).

After the first day, the animal should be observed for at least 10 days. Euthanize the animal if obviously rabid and continue the post-exposure vaccination. Instead of taking the whole course you can approach a testing facility - The National Institute of Communicable Diseases in Delhi, for example, to check the antibody titre level in your blood. If the investigators feel you have sufficient titre you will not require any more vaccinations. The required titre will vary from area to area depending on a number of factors.

Exposure of a human to a rabid animal does not always result in rabies. If prevention treatment is obtained promptly following a rabies exposure, most cases of rabies will be prevented. Untreated cases may result in death. All animal bites, regardless of whether the animal is available for rabies testing, should be evaluated by a health professional to determine if treatment is necessary.

**What should I do if my pet gets bitten by a rabid animal?**

If the attacking animal is captured, the brain should be tested for rabies. If your pet is not vaccinated, and the attacking animal was rabid, the animal should be placed in strict isolation and vaccinated before being released. Animals with expired vaccinations need to be evaluated on a case-by-case basis.

When your pet has been in a fight with the infected wild or domestic animal, and the saliva on the wound is still moist, wash the pet's wound with soap and water and wear waterproof gloves for protection while handling the infected pet within the first few hours of the incident.
Are street dogs more likely to be rabid?
No.

What should I do if I see a rabid dog?
In case of street dogs:
- Do not approach/provoke the animal.
- Do not throw sticks or stones at it.
- Disperse gathering crowds to reduce stress on the dog and reduce risks.
- Call the appropriate authority-local welfare organisation or the veterinary hospital.

In case of a house dog:
- Muzzle the animal
- Take it to a veterinarian to confirm if is actually rabid.

How can I decide if vaccination is required?
Evaluate the circumstances:
- Is the dog vaccinated against rabies?
- Was the bite completely unprovoked?
- Observe the animal for 10 days. If nothing happens, nothing will happen.
- Did the animal show signs of rabies?

How can I help in the control of rabies?
Vaccination of your own dog and the street dogs in and around your colony is the best method for controlling rabies. Keep your pets supervised on your property to reduce the chance of exposure to rabies.

Fasten trash can lids tightly as garbage attracts animals who are looking for an easy meal.
If you see any animal acting strangely, notify the local health or animal control authorities. Do not try to catch the animal yourself. However 'barking a lot', 'looking odd', 'sniffing my dog', 'looking threatening' should not be interpreted as 'strange' behaviour.

If any contact occurs or is suspected, get medical advice as soon as possible. Be sure your vaccinated pet gets a booster vaccination.

If a person gets bitten, do not panic. Wash the wound thoroughly with soap and lots of water. Get medical help. Give post exposure preventive therapy to people who may have been exposed to the virus. Those who have been exposed to rabies infection depends on the evaluation of the risk of infection which depends on the type of exposure, location of wound, rabies vaccination, status of the biting animal, etc... and the efficacy and risk of prophylactic treatment.

Pre-exposure treatment is given for several reasons. First, it will provide protection to persons with exposure to rabies which has not been apparent. Second, it will protect persons whose post-exposure therapy might be delayed. Finally, although pre-exposure vaccination does not eliminate the need for additional therapy after a rabies exposure, it simplifies therapy by eliminating the need for HRIG (Human anti-rabies immunoglobulin) and decreasing the number of doses of vaccine needed—this is important for persons at high risk of being exposed to rabies in areas where immunizing products many not be available or where they may carry a high risk of adverse reactions. The longer the treatment is postponed, the less likely it is to be effective.

HRIG provides rapid protection against rabies for one or two weeks after exposure - while the more lasting vaccine-induced immune response is developing. HRIG should be given to any previously
unvaccinated person regardless of their age, type of exposure, or time since exposure. It can be given through the seventh day following administration of the first dose of vaccine. For adults and older children, the vaccine should be injected into the deltoid muscle. For small children and infants, the muscles of the anterolateral thigh can be used. The vaccine should never be given in the gluteal area or in the same anatomical site as HRIG. If an individual misses any vaccine doses during the first two weeks of the regimen, consult the vaccine manufacturer. The schedule should be adjusted to ensure that four doses of vaccine are received during the first 14 days. The fifth dose can be given on day 28. Persons who have already received preexposure prophylaxis still require two booster doses of vaccine on day 0 and day 3.

People who are handling animals on a long term basis like veterinarians, people who work with wildlife, laboratory staff who work with the rabies virus, and long term travelers to areas where rabies is common should be given pre-exposure schedule of 0, 7 and 21st day. This should be followed by an animal booster. If bitten by a dog or exposed to a rabid animal or a suspected case of rabies without prior vaccination it is advised to go for the post exposure schedule.

**What should I keep in mind while vaccinating a dog?**

Keep the following factors in mind before vaccinating -

- **Age**: do not vaccinate before 12-16 weeks.
- **Deworm**: at least 2-3 days before
- **Health**: check for normal eating habits, temperature etc. before vaccinating
- **Medication**: If the animal is on immuno-suppressants (like steroids) postpone the vaccination

After vaccination observe for signs of fever etc. Do not allow contact with unprotected animals for at least 3-5 days.
What should I do if I see a dead dog which I suspect died of rabies?

If you must handle the dead animal, use gloves, sticks or other tools to avoid direct contact with saliva, neural fluid and brain tissue. Immediately contact the centre in your city where they test for rabies. In Delhi you should contact the National Institute of Communicable Diseases, 22 Sham Nath Marg, New Delhi-110054. Ph. 2928700, 2912901, 3985017.

According to the situation they may ask you to bring the whole dog or just a sample of brain tissue, after your veterinarian completes the post-mortem. Remember that you have to dispose the infected carcasses by burying it at least 6 feet deep with lime or by incineration. The institute can perform a number of tests. The two main ones are (i) Negri body examination where they look for inclusion bodies produced by the virus in the brain cells. (ii) ELISA (Enzyme linked Immuno-sorbent Assay) which tests for the presence of antibodies to rabies in the tissue sent.

The second test is more accurate but will take 3-4 days. In the meantime they may advise you to start the rabies vaccinations.

How to avoid dog bites

- The typical warning signs of unfriendly dogs are snarling or a stiff stance and ears laid back and fur on back standing up.
- Train your dog not to bite by teaching him simple commands.
- Do not play aggressive games like wrestling or tug-of-war.
- Do not leave children unattended with dogs.
- Tell your children to avoid strange dogs and growling dogs.
- Teach children not to take food and toys away from dogs.
- Do not run past a dog - they naturally love to chase and catch things.
- If dogs are fighting do not try to break them up by hand. Spray them with water, yell at them or make loud noises.
- Dogs should be on leash when taken out for a walk.
- Neuter your dog, as neutered dogs are less likely to bite.