



850 S. Henrickson Road • PO Box 310 • Dewey, AZ 86327 • Phone: (928) 772-8225 • Fax: (928) 759-0235  
www.KachinaAnimalHospital.com • email: KachinaAH@cableone.net

## **Rattlesnake Bite!**

**AS WITH MOST EMERGENCIES, THIS ONE IS BETTER PREVENTED THAN TREATED!**

### **Avoiding Rattlesnake Bites in Pets:**

- Avoid hiking with your pet in peak season, in areas with tall grass, rocks or wood piles.
- Stay on trails or roads and keep pets on a leash. Keep cats indoors.
- If a snake is encountered, keep pets away. Rattlesnakes can strike up to 1/2 their body length.
- Use a walking stick to rustle the bushes along the trail to alert snakes of your presence.
- Remove all food sources (exterminate rodents, etc.) and remove hiding places (wood piles, sheds and underbrush) from areas where your pet is kept. Below ground fencing and frequent mowing also discourage snakes.

Rattlesnakes cannot regulate their own body temperatures. They are less active when temperatures fall below 50 degrees or over 100 degrees. In the summer, they prefer to be in the shade during the hottest part of the day. They are most active in the evenings and early mornings, the same time that we love to walk our dogs! The majority of rattlesnake bites we see at KAH are on the dog's face or front legs from them sticking their nose into a snake hiding place. If you walk with your dog on a leash, you can watch out for snakes for them.

Many of the snake bites that we have treated occurred in the owner's own back yard. Snakes can slither over wood fence and block walls, through chain link fences, and through doggie doors! When you let your dog out at

night to potty - go with him with a flashlight and have him on a leash so you can control where he goes. Keeping your cats indoors will provide their best protection against rattlesnake bites.

Springtime snake bites may be more serious than Summer or Fall snake bites. Snakes just waking from their winter hibernation may have more concentrated venom, so less is more! Young snakes (smaller snakes) may not be as skilled in controlling the amount of venom released when they bite. Mature snakes can regulate the outflow of venom and may even deliver a "dry" bite as a warning to something they consider a threat and not food. Young snakes may not be able to control the venom output and deliver a larger volume of venom even though your dog is not a potential meal for them. A snake that has recently had a meal may have less venom available.

The species of snake can make a difference. Different breeds have different types of venom. There are 13 different species of rattlesnake found in AZ, with most common rattlesnake being the Western Diamondback (*Crotalus atrox*). The Western Diamondback is the largest rattlesnake in the west and is responsible for more bites and deaths to humans than any other species in the US. The Mojave Rattlesnake (*Crotalus scutulatus*) is considered the most toxic rattlesnake in the US. In our area around Dewey we primarily see the Mojave, the Western Diamondback, the Black-tailed, and the Arizona Black Rattlesnakes. All rattlesnakes possess a set of fangs with which they can inject large quantities of hemotoxic venom. The venom travels through the bloodstream, destroying tissue, causing swelling, internal bleeding, and intense pain. Hemotoxic means that it exerts its toxin by disrupting the integrity of the blood vessels. The swelling is often dramatic with up to 1/3 of the total blood circulation being lost into the tissues in a matter of hours. The toxin further disrupts normal blood clotting mechanisms leading to uncontrolled bleeding. This kind of blood loss induces shock and finally death. Facial bites are often more lethal as the swelling may occlude the throat or impair ability to breathe. Some species, such as the Mojave rattlesnake, additionally possess a neurotoxic component in their venom that causes paralysis and other neurologic symptoms. Caution is advised, even when snakes are believed to be dead; rattlesnake heads can see, flick the tongue, and inflict venomous bites for up to an hour after being severed from the body!

### **Rattlesnake Avoidance Training:**

This type of training is often referred to as "snake proofing", or sometimes "snake breaking". However, to be perfectly accurate, the training should be called snake aversion training, or rattlesnake avoidance training. The idea behind this type of training is to have the dog associate the smell, sound and sight of a live rattlesnake with a negative correction--a shock from a shock collar. The dog is not harmed and very quickly learns to stay away from rattlesnakes.

### **Rattlesnake Avoidance Training:**

Arizona Rattlesnake Avoidance Training Marana, AZ 85658 520-682-4114	Viper Voidance New River, AZ 480-215-1776
Blankenburg Kennel Dewey, AZ 928-254-3602 928-636-5530	Partners Dog Training School Cave Creek, AZ 480-595-6700

### **Rattlesnake Vaccine:**

The canine rattlesnake vaccine comprises venom components from *Crotalus atrox* (western diamondback). This vaccine is meant for use in healthy dogs to help decrease the severity of rattlesnake bites. The vaccine is produced from inactivated *Crotalus atrox* venom with an adjuvant and preservatives added. Dogs develop neutralizing antibody titers to *C. atrox* venom; the vaccine is specifically for the toxin of the Western Diamondback rattlesnake and provides the best protection against the venom of that particular rattlesnake, however the vaccine has been shown to provide cross protection against the venom of other types of rattlesnakes. However, the vaccine does not provide protection against the Mojave rattlesnake, Eastern Diamondback rattlesnake, cottonmouths or coral snakes.

The vaccine works by stimulating the dog's immune system to produce antibodies against rattlesnake toxin. Initially, a dog should receive two subcutaneous doses about 30 days apart. It is best to give vaccination boosters about 30 days before beginning of exposure to rattlesnakes. Protection peaks about 30 to 45 days after boosters and lasts about six

months. As the antibodies are short lived and the vaccine typically only provides protection for six months, a booster shot is necessary either once a year, one month before "snake season" or twice a year *in* areas where rattlesnakes are year-round risks. The protection level that a dog receives from the vaccine depends upon how well that individual dog produces these specific antibodies and may vary. Protective antibodies made by your dog in response to the vaccine start neutralizing venom immediately. On average, antibody levels in recently vaccinated dogs are comparable to treatment with three vials of antivenin. Almost no vaccine is effective 100% of the time. Some dogs have immune systems that won't produce as many antibodies necessary for maximum protection, but the partial protection they receive may still be enough to save their lives or help them recover more quickly. Therefore, this vaccine should not be used solely as a means of protection against rattlesnake bites. It is meant to provide some protection and to reduce the severity of the snake bite. Even good antibody protection can be overcome in special snakebite circumstances. A vaccinated dog's resistance to rattlesnake venom can be overcome with enough venom. Small dogs, larger snakes, multiple snake bites to the same dog, and bites near vital organs may minimize the benefits of the vaccine.

Vaccination side effects are reported in less than 1 % of all vaccinated dogs. Most of these side effects are mild and need no veterinary care. The most common side effect is the development of an injection site cellulitis; these vaccine site reactions can be treated with hot, moist compresses, antibiotics, and pain relief medication if necessary. Systemic reactions (typical flu like symptoms) are reported in fewer than one in 3,000 vaccinates and usually self-resolve in two to three days.

The reported benefits of vaccination include a delay in onset of symptoms, fewer symptoms, less severe symptoms, a decrease in mortality rate, faster recovery times, and little or no tissue necrosis. In addition, most veterinarians also report less painful dogs, less lethargy, less swelling, that the swelling progression typically reversed within the first 1 to 2 hours, and that dogs have had full recoveries in about 24 to 48 hours.

Snake bites are always an emergency. Even if your dog is vaccinated against rattlesnake venom, always get the pet to a veterinarian as soon as possible following any snakebite. Even non-venomous snake bites can lead to serious infections and antibiotic treatment may be needed. A veterinarian can determine what additional treatment is needed.

### **First Aid for Rattlesnake Bites:**

1. Remain calm and remove yourself and the pet from the snake's area. DO NOT TRY TO CATCH OR HANDLE THE SNAKE! There is no benefit to bringing the snake to the veterinary hospital and even decapitated snakes may still bite!
2. Wash the bite with clean water and soap or betadine.
3. Keep the animal quiet - carry the pet if possible to minimize exertion by your pet.
4. Immobilize the bitten area and keep it lower than the heart - a loose fitting wrap or bandage may be used to control bleeding and cover the puncture wounds. Check the wrap frequently to make sure it is not getting too tight as the area will begin to swell quickly.
5. Seek veterinary help immediately, even if you are uncertain if it is a rattlesnake bite.
6. Call the veterinary clinic ahead so that they can prepare (Kachina Animal Hospital @ 928-772-8225 or Prescott Area Pet Emergency Hospital @ 928-778-1990).
7. Remove restrictive collars, choke chains, etc. before swelling begins.

### **Contraindications if Your Pet is Bitten:**

1. Do NOT ice or cool the area
2. Do NOT use a tourniquet
3. Do NOT use electric shock
4. Do NOT try to suck or cut the wound

### **Veterinary Treatment of Rattlesnake Bites:**

Since the most common mechanism of death from rattlesnake bite is circulatory collapse, intravenous fluid support, antibiotic therapy, cardiac and blood pressure monitoring, antihistamine administration and pain management are very important. Fluids may be started at a relatively slow rate if the patient is stable, but should signs of impending trouble occur, circulatory volume replacement and treatment for shock is indicated. Blood transfusion may be necessary if life-threatening blood loss has occurred. A minimum of twenty four hours of post-bite observation and hospitalization is

prudent. In addition, treatment of snakebite should include antivenin administration. There are numerous misconceptions about antivenin. The first is simply the name of the product. It is not "anti-venom." It is not a single injection that provides the antidote to snake bite venom. Antivenin is a biological product consisting of antibodies made in response to exposure to four common Crotaline venoms. The antibody serum is reconstituted into an intravenous drip that is run into the patient over at least 30 minutes or so. Antivenin is expensive (at least \$600-\$800 per vial) and a large dog with a severe bite is likely to require several vials. Antivenin is very helpful in the inactivation of snake venom, but there is a narrow window during which it must be used. After about 4 hours post-bite, antivenin is less effective in countering the effects of snake venom.

In summary, rattlesnake envenomation is a serious life threatening injury and immediate veterinary care is warranted for the best success rates in surviving the ordeal. The benefits of prophylactic vaccination include more time to get to a veterinary hospital, the reduction in the amount of pain and swelling experienced, faster recovery times, and a decrease in the mortality rate. It is not meant as a sole means of protection. Emergency treatment consisting of intravenous fluid support, antibiotic administration, antihistamines, pain management and antivenin will result in the best chance of successfully surviving a rattlesnake bite.