

## How to Respond to Bites.

Note: This is a summary of a talk given at the LCS by Dr. Sam Thelin of Cruz Roja on June 12th.

**The best place to go for any toxic bite, sting or spray in Jalisco is Cruz Verde (Green Cross) at:**

**Centro Regional de Información y Atención Toxológica (C.R.I.A.T)**

**Corner of Avenida Los Angeles and Analco**

**Unidad Administrativa Reforma, Col Las Conchas, C.P. 44460, Guadalajara**

**333-669-1320 (also 1321, 1322, 1323, 1324, and 1325), ext. 1338**

They have the most experience, and they have all the anti-venom serums. But if someone is experiencing strong symptoms, it may be best to call **Cruz Roja 376-765-2308**. They can give immediate aid, and can also supply an ambulance that will save time on the trip to the C.R.I.A.T.

### **Beetles**

Dr. Thelin started his discussion with bugs that are here locally, but are not very common: biting and spraying beetles. He noted that color on a bug is usually a bad thing. Some of them produce unusual symptoms. For instance, the narrow one on the chart, second bug up on the left with a blue stripe: Its spray produces a thermal burn. And symptoms don't always start right away. For instance, a bug could fall on someone from a tree, and later, it would be difficult to know the symptoms' source. Bugs like this are not life-threatening, though. They only require thorough cleaning of the site with a strong detergent (dishwashing or laundry detergent) since many of the venoms are oil-based.

One exception to this rule is the Chagas beetle, which is about the size of a cockroach. It contains protozoa (bacteria) that requires antibiotics. It's sometimes called the kissing bug because it tends to bite the corners of the mouth or corner of eye when a person is asleep. Some people have only a minimal swelling reaction at those sites. But for the others, the protozoa, especially when the site is scratched open because of itching, can affect the smooth muscles of the esophagus, colon, and heart. The local swelling is much bigger than a mosquito bite. Medical assistance should be sought for any unusual swelling around the corners of the mouth or eyes.

Cockroaches do not bite. But they're not very good at moving backward, so they sometimes need to be extracted from the ears and nose of people who were sleeping.

### **Bees, Wasps, and Hornets**

Some people have an allergic reaction to the venom of wasps, bees, and hornets, resulting in unusual swelling and anaphylactic shock symptoms like an itchy rash and throat swelling. Some people with the allergy have stronger reactions each time they're bitten, eventually resulting in life-threatening scenarios. However, the opposite can also occur. A person with

the allergy can develop a tolerance for it over time. Corticosteroids can be administered, but they take time to take effect. Anti-histamines can be given for anaphylactic symptoms. But the best immediate response is an injection of epinephrine, which works like adrenalin. North of the border, an EpiPen can be purchased for \$50 - \$80 USD for a single dose. Locally, epinephrine can be purchased for about \$1.00 USD for a 1ml vial. A person can survive this dose, but .3ml is the standard dose. Care must be taken when injecting epinephrine not to aspirate it into a vein, where it could travel to the heart.

Killer bees are known to live in Mexico, but Thelin has seen no cases of their stings locally.

## Spiders

Thelin noted that only two spider families in the world are not toxic. They were actually toxic at one time, but mutations altered them. There is only one family of spiders locally that is not toxic, but it's not worth trying to determine which one it is. It's best to assume that all spiders are toxic, and to kill them.

How toxic are spiders? **Black widow spiders are the most dangerous here.** However, since the male cannot penetrate the skin, those are not a threat. Brown widow spider venom is actually more toxic, but the spider injects less of it than the female black widow. It has an hourglass shape on its abdomen like the black one does, but the hourglass on the brown one is less distinct, and may be distorted. One of the biggest differences between the two is that the venom of the brown ones affects only a body region, like an arm, so it is not considered life-threatening. But black widow spider venom is a neurotoxin, and is systemic. It produces overstimulation of nerves and large muscle groups, causing cramps, a higher heart rate, and agitation. If a cramp occurs in the diaphragm, the person may not be able to breathe, and can die. The reaction depends on the mass (weight) of person and on individual tolerance. Some people react more strongly. Black widow spiders will leave a double-pronged mark (see the finger image on the chart). Thelin's experience is that in over 80% of the cases of scorpion and black widow spider bites, the person will know what bit them since the cause is usually that the animal has been frightened or disturbed.

Thelin receives black widow spider anti-venom from the secretary of *salud* in Guadalajara, but it is in short supply. Cruz Roja often sees 8 or 9 bite patients a day, so a weekly supply of 20 vials can be depleted quickly. One vial is always kept in reserve for children under 5 years old, who are much more at risk of dying from a black widow spider bite than an adult.

**The next most dangerous spider locally is the brown recluse spider.** A bite from it may not produce immediate symptoms. It often looks like a mosquito bite which then gets bigger and bigger. Medical attention should be sought for any bite which produces symptoms more serious than moderate local swelling (difficulty breathing, numbness, cramps, extraordinary pain, etc.).

The most common spiders locally are the jumping spiders. Although they bite, they're not aggressive, and they're not toxic enough to hurt anyone.

Lynx spiders can also bite, but not seriously. Interestingly, they can also spray their venom. If someone gets sprayed in the eye, it will hurt, but it will not cause blindness. The eye simply needs to be rinsed well.

Thelin has not seen any bites from the common wall spiders, the big, thin, flat ones. However, there's no reason to keep them around, either.

## **Snakes**

Thelin noted that there do not seem to be many snake bites locally. He has only seen one: from a water snake swimming in Lake Chapala. The lower left side of the chart shows snake bite marks, both when the snake has bitten with all of its teeth and when it has only bitten partially. Venomous snakes also leave fang marks, characterized by two larger holes in addition to the smaller teeth marks. Although federal regulations prohibit the killing of wildlife (for the purpose of collecting for pets or exotic skins, etc.), no one should worry about being prosecuted for killing a threatening snake in the wild.

## **Scorpions**

Scorpion stings constitute the most common sting emergencies, with the bark scorpion sting being the most common. Scorpions in northern Mexico are more dangerous than the ones locally. They all dislike cold weather, during which time they become inactive, as if hibernating. They come out in warm weather, and they try to come indoors in rainy weather. Their high season is now (June). There are two families of scorpions (which are related to spiders): *centruroides* and *vaejovis*. The latter is the type seen 90% of the time here. Color (which can vary widely) does not determine toxicity, but size does. The bigger it is, the less toxic its venom needs to be for it to defend itself. Smaller pincers usually means more toxicity because having larger pincers means it has another way to kill its prey. Another factors that determine how toxic a sting will be is how long it's been since it's bitten someone (it has low metabolism and only needs to eat once a year), and how much it wants to give you. It's not in its interest to use all its toxin if it doesn't need to – if it's merely annoyed. Even stings containing small doses of venom will hurt quite a bit. But if the scorpion is trapped in someone's pants or is stepped on inside a shoe, it will release all its venom.

Scorpion venom consists of neurotoxins designed to kills its prey. The pain is a side effect of overloaded nerves. Since the pain is caused by inflammation, standard pain killers (Tylenol, etc.) will have no effect. Only thing that will get rid of the pain is an injection of lidocaine, which few people choose to take. Then pain can last a long time. Thelin cited one case (not a local case) of a *centruroides* scorpion being trapped in a pant leg, and the leg pain lasted for three weeks, followed by numbness (caused by nerve exhaustion) for almost three months. Although the pain from scorpion stings can be alarming, there are not many resulting fatalities, most likely because people seek treatment quickly. Small children up to age 5 are especially vulnerable, however, so Cruz Roja automatically gives them the antidote. The elderly can also be especially vulnerable. For everyone else, the antidote is given if the symptoms are more serious than just pain. Thelin has not had direct experience giving the antidote to dogs, but assumes it will work. It's best to see a veterinarian in those cases, however.

Over-the-counter scorpion sting remedies like Benadryl (anti-histamines) do not work because they are not anti-toxins. Older anti-venom serums used to contain elements that caused allergic reactions in some people. So, the standard protocol was to administer anti-histamines along with the anti-toxin serum. Modern anti-toxin serum is quite pure, however, and does not cause allergic reactions.

The common preventative scorpion sprays are mildly toxic. They contain organo-phosphates similar to the nerve gas used in World War II. The "pet safe" sprays simply use a lower dose. But, these mild toxins are quickly cleansed by enzymes from the body of humans and pets. Scorpions do not have this enzyme, so the organo-phosphates stay in their body and kill them.