

## Heat Stroke

Heat stroke is hyperthermia (high body temperature) that develops when the body's normal cooling mechanisms (mainly panting) are overcome by heat. The body temperatures in these animals are often 106° F and above. The problem with such high body temperatures is the development of multisystemic organ damage and dysfunction. Both dogs and cats of any age or breed can be affected. Obese animals and those with thick hair coats are at an increased risk. The brachycephalic (short-nosed) dog breeds such as Bulldogs, Pugs, Boxers, etc are especially predisposed due to breed related upper airway conformation. Dogs with laryngeal paralysis are also at risk. Animals shut in cars without the windows down can suffer from heat stroke even on a cool day. Humidity can also increase the risk of heat stroke for short nosed dogs.

Hospitalization of patients with heat stroke is imperative. Most animals require intensive care and monitoring for a couple of days. Initial treatment involves cooling the patient, oxygen support and IV fluids. Some patients with severe upper respiratory compromise require a tube placed in the trachea to breathe through. Sedation may be necessary to keep very anxious/hyperactive animals quiet and cool. Broad-spectrum IV antibiotics and GI protectants are indicated in most cases. Other specific medications will be used based on additional side effects that may arise (i.e. antiseizure medications, anti-arrhythmic). Blood pressure, ECG and urine output monitoring is important. If patients develop blood clotting issues, multiple transfusions may be required to stabilize them.

The prognosis for heat stroke is guarded in general and very variable between patients. The severity, duration of the elevated temperature, and presence of predisposing factors all lend toward the likelihood/severity of multiorgan damage. Sometimes organ damage is repairable with time, but sometimes it is not. Unfortunately, there is no reliable way to determine which patients will recover fully and which will not at initial presentation. Some patients recover and are discharged from the hospital but develop later complications, such as seizures or heart arrhythmias. Many times these things can be controlled, but it is important for owners to be aware that they can develop. Patients that develop a syndrome called DIC/disseminated intravascular coagulation, have a very poor prognosis. This is a very complex syndrome of altered blood clotting, bleeding and further organ damage that is very difficult to prevent and treat.

Above all the most important thing for owners to understand about heat stroke is that it is an emergency situation. The animal should be taken to a veterinarian as soon as possible for treatment. Cooling during transport with air conditioning and wet towels is a good idea, but delay in getting the animal to the hospital for cooling at home is not recommended. Avoid ice or alcohol to cool the patient as this can cause the blood vessels to constrict and keep the heat HIGH in the body of the patient. Aggressive care at a veterinary facility will give the best chance of full recovery, but owners must be aware of the possibility of complications and the guarded prognosis from the beginning.