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Heat Stroke in Dogs

What is heat stroke?

Heat stroke is a term commonly used for *hyperthermia* or elevated body temperature. Generally speaking, if a pet's body temperature exceeds 103°F (39.4°C), it is considered abnormal or hyperthermic. Body temperatures above 106°F (41°F) without previous signs of illness are most commonly associated with exposure to excessive external or environmental heat and are often referred to as heat stroke. The critical temperature where multiple organ failure and impending death occurs is around 107°F to 109°F (41.2°C to 42.7°C).

What causes heat stroke?

The most common cause of heat stroke or hyperthermia is leaving a dog in a car with inadequate ventilation. The dog's body temperature in this situation can elevate very rapidly, often within minutes.

"Their primary way of regulating body temperature is by panting."

It is important to remember that dogs cannot control their body temperature by sweating as humans do, since they only have a relatively small number of sweat glands located in their footpads. Their primary way of regulating body temperature is by panting.

Other common causes of heat stroke include being left in a yard without access to shade or water on a hot day, being exposed to a hair dryer for an extended period of time, and excessive or vigorous exercise during hot temperatures. Excited or excessively exercised dogs are sometimes at risk even if the environmental temperature and humidity does not appear hot. This is particularly true if they are kept in a poorly ventilated environment or dog house.

Dogs with a restricted airway such as the brachycephalic breeds (flat faced dogs such as pugs, boxers and bulldogs) are at greater risk. In these breeds, clinical signs of heat stroke can occur when the outside temperature and humidity are only moderately elevated.

Dogs that are muzzled for any reason can be at greater risk since their ability to pant is restricted by the muzzle.

Any infection causing fever (*pyrexia*) can lead to hyperthermia. Seizures or severe muscle spasms can also elevate the body temperature due to the increase in muscular activity.



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What is the treatment for heat stroke?



Hyperthermia is an immediate medical emergency. Safe, controlled reduction of body temperature is a priority. Cool water (*not* cold) may be poured over the head, stomach, armpits and feet, or cool cloths may be applied to these areas. Rubbing alcohol may be applied to the footpads to dilate pores and increase perspiration. Ice may be placed around the mouth and anus. Intravenous fluids, mild sedation and low-concentration oxygen therapy are also commonly used to treat heat stroke.

The dog's rectal temperature should be monitored and treatment discontinued once the pet shows signs of recovery or the temperature has fallen to 103°F (39.4°C).

What is the prognosis for heat stroke?

"The prognosis depends on how high the body temperature elevated, how long the hyperthermia persisted and what the physical condition of the pet was prior to the heat stroke."

The prognosis depends on how high the body temperature elevated, how long the hyperthermia persisted and what the physical condition of the pet was prior to the heat stroke. If the body temperature did not become extremely high, most healthy pets will recover quickly if they are treated immediately. Some pets may experience permanent organ damage or may die at a later date from complications that developed secondarily to the hyperthermia. Pets that experience hyperthermia are at greater risk for subsequent heat stroke due to damage to the thermoregulatory center.

This client information sheet is based on material written by: Ernest Ward, DVM

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