



Hypothermia

(Low Body Temperature)

Basics

OVERVIEW

- “Hypothermia” is the medical term for low body temperature
- Hypothermia is a condition in which the core body temperature drops below that required for normal metabolism
- Mild hypothermia—body temperature of 90–99°F (32–37.2°C)
- Moderate hypothermia—body temperature of 82–90°F (28–32°C)
- Severe hypothermia—any body temperature less than 82°F (28°C)

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predispositions

- Smaller breeds with increased surface area for heat loss

Mean Age and Range

- More common in newborn and senior pets

SIGNS/OBSERVED CHANGES IN THE PET

- Known prolonged exposure to cold ambient temperatures
- Possibly history of disappearance from home or of trauma
- Cold, unresponsive pet

Mild Hypothermia (Body Temperature of 90–99°F; 32–37.2°C)

- Sluggishness (lethargy)
- Weakness
- Vigorous shivering (variable)
- Variable heart rate, rhythm, and blood pressure
- Light pink to pale gums and moist tissues of the body (known as “mucous membranes”)
- Confusion, agitation, or mental dullness

Moderate Hypothermia (Body Temperature of 82–90°F; 28–32°C)

- Collapse

- Reduced shivering (variable)
- Slow heart rate (known as “bradycardia”)
- Low blood pressure (known as “hypotension”)
- Pale gums and moist tissues of the body (mucous membranes)
- Muscle and joint stiffness
- Mental dullness, stupor, or coma
- Wobbly, incoordinated or “drunken” appearing gait or movement (known as “ataxia”)
- Decreased reflexes (known as “hyporeflexia”)
- Decreased depth and rate of breathing

Severe Hypothermia (Body Temperature Less than 82°F; 28°C)

- Near the point of death (known as being “moribund”)
- Cold skin with fluid buildup (known as “edema”)
- Loss of shivering (variable)
- Slow, irregular heartbeats (known as “bradyarrhythmias”) with low blood pressure (hypotension)
- Pale gums and moist tissues of the body (mucous membranes)
- Muscle and joint stiffness
- Coma
- Fixed and dilated pupils
- Lack of reflexes (known as “areflexia”)
- Decreased depth and rate of breathing
- Fluid buildup in the lungs (known as “pulmonary edema”)
- Breathing stops (known as “respiratory arrest”)
- Heart stops (known as “cardiac arrest”)

CAUSES

- Prolonged exposure to cold ambient temperature
- Impaired ability to regulate body temperature (such as in newborns, older pets, pets with low levels of thyroid hormone [known as “hypothyroidism”])
- Impaired behavioral responses—as seen in newborns or sick, debilitated, or injured pets
- Surface heat loss—as in newborns and small pets
- Inadequate heat generation—as in newborns and pets with extreme weight loss and muscle wasting

RISK FACTORS

- Disease of the hypothalamus, the part of the brain that regulates appetite and body temperature
- Very young or old age
- Low body fat
- Burn injury
- Injury or disease of the brain
- Low levels of thyroid hormone (hypothyroidism)
- Condition in which levels of acid are increased in the blood due to the presence of ketone bodies secondary to diabetes (known as “diabetic ketoacidosis”)
- Generalized bacterial infection (known as “sepsis”)
- Trauma
- General anesthesia and surgery
- Administration of certain medications (such as beta-blockers, barbiturates, and narcotics)

Treatment

HEALTH CARE

- Emergency inpatient intensive care until normal body temperature is reached and the pet is stable
- Active external rewarming using warm blankets, heating pads, radiant heat, warm baths, or forced warm air is used in pets with mild-to-moderate hypothermia
- Rewarming for pets with severe hypothermia may include breathing warm, humidified oxygen, administration

of warmed intravenous fluids, and various techniques where warmed fluids are used to flush out the stomach (known as “gastric lavage”) or urinary bladder (known as “bladder lavage”) or other body cavities

- Anticipate possible further drop in body temperature during initial rewarming
- Fluid therapy
- Breathing support may be necessary

ACTIVITY

- Pets with mild hypothermia should be encouraged to be active, as muscle activity will generate more body heat

DIET

- The pet’s nutritional needs and ability to eat will determine the route of feeding, such as normal feeding by mouth, tube feeding, or intravenous feeding

Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Oxygen supplementation may be provided via a face mask or endotracheal tube
- Dextrose supplementation to intravenous fluids is indicated in pets with low blood sugar (known as “hypoglycemia”)

Follow-Up Care

PATIENT MONITORING

- Continuous core body temperature during rewarming
- Monitor electrocardiogram (ECG, a recording of the electrical activity of the heart) and blood pressure to assess status of circulatory system during rewarming
- Frequent assessment of blood tests, such as packed cell volume (PCV, a means of measuring the percentage volume of red blood cells as compared to the fluid volume of blood) and total solids (a quick laboratory test that provides general information on the level of protein in the fluid portion of the blood), and electrolyte (chemical compounds, such as sodium, potassium, chloride) status
- Daily monitoring of other blood tests (such as blood urea nitrogen or BUN, clotting tests, and liver tests) in severely affected pets
- Observe for development of frostbite

PREVENTIONS AND AVOIDANCE

- Avoid prolonged exposure to cold, especially with at-risk pets (such as small pets, older pets)
- Warm the pet and monitor body temperature in anesthetized pets

POSSIBLE COMPLICATIONS

- Further drop in body temperature may occur during rewarming
- Return of cool blood to the heart may lead to irregular heartbeats (cardiac arrhythmias)
- Severely low body temperature (severe hypothermia) may cause the heart to stop beating (known as “cardiac arrest”)

EXPECTED COURSE AND PROGNOSIS

- Varies with severity of low body temperature (hypothermia), underlying cause, and health status of the pet

Key Points

- Avoid prolonged exposure to cold, especially with at-risk pets (such as small pets, older pets)
- Warm the pet and monitor body temperature in anesthetized pets

Notes

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