



# Cattle Producer's Handbook

Management Section

788

## Care of Hypothermic (Cold Stressed) Newborn Beef Calves

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Surveys show that mortality in beef herds from birth to weaning ranges from 3 to 7 percent. The majority of normal deaths occur within the first 24 hours of life. Slow and difficult births (dystocia) and cold stress (hypothermia) are the leading causes of death during this period. Proper care and treatment of the hypothermic or cold stressed calf can prevent this.

### Types of Hypothermia

The two types of hypothermia are exposure (gradual) and immersion (acute). Exposure hypothermia is the steady loss of body heat in a cold environment through respiration, evaporation, and lack of adequate hair coat, body flesh, or weather protection. This type of hypothermia affects all classes of livestock but particularly affects young, old, and thin animals.

Immersion hypothermia is the rapid loss of body heat that results from a wet, saturated hair coat in a cold environment. Immersion hypothermia often occurs after the birthing process because the calf is born saturated with uterine fluids. Other causes of immersion hypothermia of young calves may include being born in deep snow or wet ground, falling into a creek, or being saturated from heavy rains followed by chilling winds.

### Symptoms of Hypothermia

Faced with a cold environment, the body tries to defend itself in two ways: shivering, to increase muscle heat production, and blood shunting, to reduce heat loss by diverting blood flow away from the body extremities to the body core.

Mild hypothermia occurs as the body's core temperature drops below normal (approximately 100°F for beef calves). In the early stages, vigorous shivering is usually accompanied by increased pulse and breathing

rates. A cold nostril and pale, cold hooves are early signs that blood is being shunted away from the body's extremities. In the case of newborn calves, severe shivering may interfere with its ability to stand and suckle. This increases the chances for severe hypothermia. Erratic behavior, confusion, and a clumsy gait are all signs of mild hypothermia. Producers often refer to these as "dummy" calves.

Severe hypothermia results as the body temperature drops below 94°F. Shunting of blood continues, manifesting as cold and pale nostrils and hooves. Paleness is the result of poor oxygenation of the tissues near the body surface. Decreased peripheral circulation also results in a buildup of acid metabolites (waste products) in the muscles of extremities. After the shivering stops, it is replaced by muscle rigidity. The pulse and respiration begins to slow as the body core cools to 88°F.

Below core temperature of 94°F the vital organs are beginning to get cold. As the brain cools, brain cell metabolism slows, resulting in impaired brain function. The level of consciousness deteriorates from confusion to incoherence and eventual unconsciousness. Below 86°F signs of life are very difficult to detect and the calf may be mistaken for dead. The pupils of the eyes will be dilated and fixed. The pulse may be undetectable. Occasional gasps of respiration at a rate as low as four or five per minute may be the only clue that the calf is still alive. Heart failure may be the actual cause of death.

### Treatment of Hypothermia

The use of a thermometer is essential to determine the degree of hypothermia. Often a calf does not appear to be hypothermic, however, upon taking its temperature, you find that the calf's body temperature is below normal.