Vet Call

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Guard against hypothermia

In many areas of the country, calves are born during times of the year when cold stress can be a leading cause of death. During the first 24 hours of life, calves are in the greatest danger of cold stress (also called hypothermia).

Effects of cold stress

Because calves are born wet, with a saturated hair coat, body heat loss can be very rapid until they are dry. Contact with snow or wet ground will increase the amount of time a calf stays wet and in danger.

Calves are born with a body temperature of about 100°F. When exposed to a cold environment, calves are able to produce heat in two ways, shivering and heat production of brown adipose tissue (brown fat that surrounds the kidneys of a newborn). They can conserve heat by reducing blood flow to the body surface and extremities, such as feet and ears.

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In early stages of cold exposure, calves will shiver vigorously and have a faster heart rate and breathing rate. If that does not keep body temperature up, the calf's body sends less blood to extremities in an effort to minimize heat loss. When this occurs, nostrils and feet feel cold to the touch.

Severe cold stress occurs when body temperature drops below 94°F. At this temperature, the brain and other organs are affected and the calf becomes depressed, unable to rise and possibly unconscious.

Calves suffering from cold stress must be warmed so that body temperature can rise above 100°F. If body temperature has not dropped too far, putting the calf in the cab of a pickup, out of the wind and moisture and with the heater blowing, will warm the calf. In more severe cases the calves can be placed in warm water, specially designed warming boxes, or near a heating source such as an electric blanket, heat lamp or hot water bottle. To avoid skin burns, the heat source should not exceed 108°F. In addition to an external heat source, cold-stressed calves should be fed warm colostrum, milk or electrolyte fluid with an energy source using an esophageal feeder.

An experiment done in Canada in the late 1980s showed that immersing calves in warm (100°F) water, being careful to keep calves' heads above water, brought body temperatures back to normal within 1 hour vs. 1.5 hours for calves warmed with added insulation or infrared lamps. Once body temperature returns to 100°F, the calf's hair coat should be dried before being returned outside. If using a warming box, care must be taken to circulate air, reduce humidity and remove the animal once body temperature reaches 100°F.

During periods of cold or wet weather, newborn calves less than 24-48 hours of age should be checked periodically with a thermometer, and any calf with a below-normal temperature, even if it appears OK, should be warmed.

Prevention

Prevention of cold stress involves management techniques to ensure that calves are born in a short period of time and that both the calf and dam can stand shortly after calving so they can bond and the calf can begin suckling. Anything that prolongs calving or reduces the chance that a calf will nurse soon after birth should be addressed by management changes. Calving difficulties are minimized by proper heifer development, proper bull selection for calving ease or birth weight, and proper nutrition so that heifers and cows calve in a body condition score (BCS) of 5 to 6 on a 9-point scale. Cows with large teats and nonattentive mothers should be culled.

In addition, work at the U.S. Department of Agriculture (USDA) research facility in Montana found that feeding cows a high-fat diet supplemented with safflower seed for 45 days prior to calving resulted in calves that were able to maintain body temperature for a longer period of time during cold stress.

Calving pastures that provide mud-free areas out of the wind are important to minimize the risk of cold stress. A large pasture with good drainage, southern exposure and a natural windbreak is probably adequate for many herds. Inexpensive windbreaks can be constructed when natural protection is lacking. Windbreaks should be sufficiently large to avoid concentrating cattle.

In areas of the country with minimal snowfall, winter pasture can be stockpiled. Cool-season grasses, such as tall fescue, are permitted to grow in the fall, and access to these pastures is restricted until calving season. Use of pasture as the primary forage source during calving encourages cows to spread out within the pasture and minimizes development of muddy areas.

If the herd forage plan includes feeding hay, consider feeding hay in early to mid-gestation and saving stockpiled pasture for the calving season. If supplemental hay and grain are fed during calving, these should be provided at locations that are separate and distant from water sources and windbreaks. This practice will encourage cows to disperse within the pasture and will minimize development of muddy areas.

I discourage the use of bale rings in calving and nursery pastures. If using large round bales, they should be unrolled and the feeding area changed with each feeding. Unrolled bales will have greater hay waste, but will reduce mud caused by concentrating the herd into small feeding areas. Unrolled hay also provides bedding for newborn calves so they are not in direct contact with the ground.

Planning ahead and considering newborn comfort and protection when making heifer development, bull selection, nutrition and pasture management decisions can greatly reduce the risk of cold-stressed calves if inclement weather occurs during calving. If calving occurs during cold or wet weather, producers will need to carry a thermometer to monitor calves during the first one to two days of life, and will need to have facilities available to rapidly and safely warm calves.

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