



# Vet Call

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## Euthanasia of cattle

*Euthanasia is the practice of ending the life of an ill or debilitated animal in as painless and low-stress manner as possible. While an important component of animal care, this practice is not simple because potential methods of euthanasia each have their limitations.*

### When to consider

There are a number of reasons for or situations in which euthanasia of cattle or calves should be considered. If an animal has suffered a severe trauma, such as a fracture or other injury, and the likelihood of the animal recovering is low or recovery is only possible after a prolonged period of discomfort, euthanasia is often considered to be the most humane treatment. Diseases such as cancer eye and other tumors, and severe cases of pneumonia, mastitis, and other diseases with a poor likelihood of recovery as well as prolonged distress, can lead a veterinarian and producer to determine that euthanasia is preferable to continued, ineffective treatment.

If an animal is down and unable to rise and the animal is not likely to recover within a reasonable amount of time, that animal should be euthanized.

Basically, the decision to stop treatment and to instead euthanize an animal is based on several factors, including unacceptable pain and distress of the animal, a low likelihood of recovery, the inability to get to feed and water, the likelihood that the animal would be condemned if offered for slaughter, or the potential to gain diagnostic information that would be helpful to the health of the rest of the herd or to protect human health.

### Methods and procedures

Because cattle are large and euthanasia options — by their definition — have the ability to end life, human safety is a primary concern when selecting a method of euthanasia. In addition, any euthanasia method utilized should produce a quick and painless death.

Many potential euthanasia techniques require that the animal be restrained. If restraint is not possible, the list of potential methods of euthanasia becomes limited.

Some methods of euthanasia, such as injectable overdoses of barbiturates are effective, but require a special veterinary

license or require special training and skill, such as use of a captive bolt stunner. While all approved methods of euthanasia result in an animal becoming instantly unconscious, with some methods the unconscious animal may still have involuntary movements and jerks that can be misinterpreted as a response to pain, which is a definite drawback if the euthanasia will be done in the presence of untrained people.

There are situations (such as concern about rabies) that require tissues from a euthanized animal be sent to a laboratory for testing. In these cases, selecting a method of euthanasia that does not damage the desired tissue (such as the brain) is essential.

In general, euthanasia is a two-step process, with the animal first being rendered unconscious in a manner that involves minimal stress and discomfort, followed by the ending of breathing, heart function, and brain function. Each approved method of euthanasia will either involve direct destruction of brain tissue (gunshot, penetrating captive bolt), drugs such as anesthetics or barbiturates that directly depress the central nervous system and induce death by the stoppage of breathing, or agents that induce unconsciousness followed by mechanisms to remove oxygen-carrying blood (exsanguination).

The methods of euthanasia for cattle recommended by the Animal Welfare Committee of the American Association of Bovine Practitioners (AABP) include:

- gunshot to the head;
- captive bolt “gun” followed by injection of an appropriate toxic drug or cutting a major blood vessel;
- injection of an overdose of barbiturate into a major vein;

- cutting a major blood artery after the animal is rendered unconscious by use of a captive bolt “gun” or an anesthetic drug; and, in special situations,
- electrocution, if specially designed equipment is available (usually only available at a slaughter plant).

Regardless of what method of euthanasia is chosen, death is confirmed by the lack of a heartbeat or breathing for more than five minutes.

### Descriptions

**Gunshot:** If performed skillfully, gunshot induces unconsciousness instantly and does not require close contact with the animal (2 to 10 inches from the head). However,

this method should only be attempted by individuals trained in the use of firearms and the proper location of the point of impact for euthanasia, and who understand the potential for ricochet. Care must be taken to minimize danger to the operator, to bystanders, and to other animals. In addition, since some cities have laws prohibiting the discharge of firearms in certain areas, the operator should be aware of

local ordinances that may apply.

**Captive Bolt:** Captive bolt “guns” are placed firmly against the skull (training is required to identify the correct location) of a restrained or sedated animal. The bolt is either penetrating or non-penetrating depending on the gun type. Both types (penetrating and non-penetrating) will consistently cause stunning of an animal. A stunned animal will “drop” but will still exhibit respiration and sudden quick limb movements. An additional procedure (exsanguination or injection of chemical agents) must be used to ensure death after the use of the non-penetrating captive bolt and is recommended after use of the penetrating captive bolt.

**Barbiturate:** When properly administered into a large vein, barbiturate overdose produces rapid unconsciousness and anesthesia followed by slowing and then

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stopping of breathing and a heartbeat. These types of drugs can only be stored and used by veterinarians, and because tissue residues of the barbiturate can be high, scavengers should not have access to the carcass.

**Exsanguination:** This method can be used to ensure death after stunning, anesthesia or unconsciousness. It must not be used as the sole method for euthanasia. There are several methods for exsanguination. The most common method in the bovine is to cut one or both carotid arteries in the neck, the

major arteries located under the front legs, or the aorta.

**Electrocution:** This method should only be attempted using specialized slaughter plant equipment that applies a minimum of 2.5 amp across the brain. A 120-volt electrical cord does not apply sufficient amperage to cause cattle to become unconscious.

Cattle producers will occasionally be confronted with ill or debilitated animals that should be humanely euthanized. This important task should be done by people with the skills and training to maintain

human safety as well as to ensure a quick and painless death of the animal.



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**Author's Note:** Information in this article was obtained from "Practical Euthanasia of Cattle: Considerations for the Producer, Livestock Market Operator, Livestock Transporter, and Veterinarian," prepared by the Animal Welfare Committee of the American Association of Bovine Practitioners.