



Beef Cattle Handbook



BCH-3058

Product of Extension Beef Cattle Resource Committee
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Fundamentals and Technique of Oral Fluid Therapy

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Principles of Dehydration

Whole-body dehydration results from either inadequate fluid intake or abnormally rapid losses of body fluids. Inadequate fluid intake may occur when cattle are restricted or denied free access to drinking water for extended periods of time.

Cattle subjected to stress, such as that associated with handling or transporting with prolonged exposure to adverse temperature and weather variation, will shrink in body weight. Shrink is related to tissue dehydration and a loss in body fluids. Stressed cattle lose their thriftiness and their ability or desire to eat and drink until rested.

The rapid loss of fluids and dehydration are characteristic features of a variety of disease conditions: diarrhea, vomiting, excessive urination in kidney disease, excessive blood loss, excessive saliva loss in diseases such as vesicular stomatitis, and persistent fever in the face of depressed thirst and appetite. If fluid losses continue and fluid intake does not adequately compensate, dehydration occurs. Whole-body fluid volume is reduced and the non-fluid blood components become concentrated, leading to increased blood viscosity. Finally, due to circulatory collapse, a condition referred to as "shock" results, which often terminates in death.

Loss of body fluid often coincides with changes in the electrolyte (salts) and acid-base balance of the body, depending upon the cause of the dehydration. The normal animal maintains the balance of fluid and electrolytes within very narrow limits by consuming water, minerals, and salt. In the sick or debilitated animal, oral fluid therapy is a rehydration technique that will con-

tribute to a more rapid recovery. The fluid used is water that may have medication and/or nutrients added.

Role of Water

Water is one of the five major nutrients. During periods of stress and exposure to disease, quality drinking water plus proper nutrition are basic to maintaining cattle health and thriftiness. Water provides the fluid medium in which the chemical reactions of the body take place. It also has a high specific heat (ability to absorb or give off heat with a relatively small change in its temperature). Thus it is an ideal temperature-buffering system for the body. Water is also the medium for transporting nutrients and wastes within the body. Water is an ideal vehicle for administering oral medication and supplemental nutrients.

To optimize treatment and speed recovery of sick animals, essential nutrients must be supplied in proper combinations to meet the nutritional needs of the animals' body. Attempting to restore health entirely with drugs, without consideration of nutrition, is futile. One method of providing essential nutrients is oral fluid therapy; water, energy, and electrolytes are the nutrients most frequently supplied by oral therapy.

Oral fluid therapy is often used simply because the fluid is easily fortified with energy and electrolytes to aid recovery, particularly in animals that are too sick to eat or drink. It is an essential treatment for scouring calves since dehydration and electrolyte imbalance are the usual cause of death. Although many people use table salt, baking soda, bouillon, and sure-jell in water as a homemade electrolyte, available commercial elec-

trolytes are far superior. These products provide the proper balance of nutrients, which optimally aid in restoring health, and should be administered in strict accord with manufacturers' directions. In response to oral supplemental nutrient fluid therapy, animals often show marked improvement in a relatively short time.

Oral Fluid Technique

Traditionally, drenching has been a way to administer fluids via the mouth, generally using a pop bottle or a large syringe (drenching gun). Liquid was poured in the mouth while holding the head up. Although simple, this procedure can easily result in the liquid being aspirated into the lungs, where it can cause pneumonia or can even drown the animal.

A veterinary technique involves passing a tube through the nose (usually in a horse) or through the mouth (bovine) into the stomach or rumen (paunch) for administering quantities of fluid, usually with a pump. These techniques in unskilled hands can also result in damage to the throat of the animal, or the tube can be passed into the lungs instead of the stomach.

Bovine Esophageal Probe

The entrance to the windpipe of a bovine animal closes when the animal is swallowing and opens to allow the animal to breathe. The windpipe also automatically closes when stimulated by foreign bodies in that area. Problems may develop in drenching when a liquid runs down the throat as the animal is taking a breath. The liquid may be aspirated with the breath, causing the animal to cough and choke in an attempt to expel the fluid from the windpipe. If unsuccessful, the fluid runs down the windpipe into the lungs and the animal may actually die from drowning.

The bovine esophageal feeder was originally designed to treat sick calves with fluids orally. The bovine esophageal feeder consists of a stainless steel or plastic ball probe with an attaching plastic tube and reusable plastic pouch for administering the solution

directly into the rumen. Standing to the side, or in the case of a calf, astraddle the animal, the operator places an arm over the animal's neck just behind the ears and grasps the jaw, holding the head so there is a straight line from jaw to brisket. The probe is inserted with the free hand and gently but firmly slid down the throat. The probe should never under any circumstances be forced. If it meets with resistance, draw back and move slightly to one side or the other. The ball on the end of the probe prevents its entry into the windpipe. The animal should be given time to swallow. This technique is fast, safe, and economical.

The plastic pouch held at various heights allows for a controllable flow of liquid into the stomach. When the flow is too fast, such as when the bag is squeezed, the sudden increase of volume in the stomach, particularly in a calf, can be painful or cause the fluid to flow back around the tube. In this case, the fluid can be inhaled. Allow the liquid to flow via gravity without force.

Both the amount and kinds of fluids administered are very important in the recovery of a sick animal. The most common error is giving too little. When the eyes of a calf or cow are observed to be sunken, which is the most commonly recognized sign of dehydration, the animal has already lost between 6 and 10 percent of its body weight in water. For more specifics on what, when, and how much to give, consult with a practicing veterinarian.

Bovine esophageal probes are available in three sizes designed for baby calves, stocker-feeder yearlings, and mature cattle. The larger size probes may be equipped with a hose and hand pump for administering sufficient quantities of fluids as indicated by the size and weight of the larger animals. The bovine esophageal feeder is a tremendous labor-saving device, replacing the pop bottle, the speculum, and stomach tube techniques used in the past.

Adapted from CATTLE PRODUCER'S LIBRARY CL647

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This publication was prepared in cooperation with the Extension Beef Cattle Resource Committee and its member states and produced in an electronic format by the University of Wisconsin-Extension, Cooperative Extension. Issued in furtherance of Cooperative Extension work, ACTS of May 8 and June 30, 1914.