

The Esophageal Feeder- A Life Saving Tool for Calves

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“Failure of passive transfer” of immunity (also called “FPT”) occurs when a calf fails to absorb an adequate quantity and quality of immunoglobulin prior to closure of the intestine that occurs at approximately 24 hours after birth. Failure of passive transfer has been linked with increased calf morbidity (sickness), mortality (death), and a reduction in calf growth rate and feed efficiency. It is estimated that of the calf deaths occurring in the first 3 weeks of life, approximately a third are due to inadequate colostrum intake. **Early and adequate consumption of high quality colostrum is considered the single most important management factor in determining health and survival of the neonatal calf.** There are 4 key factors (the 4 Q’s) that contribute to the goal of successful passive transfer of immunity:

1. Quality: Feeding high quality colostrum with a high immunoglobulin concentration (>50 g/L of IgG) or use of a good quality powdered colostrum replacer (not a supplement). Colostrum obtained from the cow should be from an udder prepped for milking and collected in a clean container to reduce bacterial contamination.
2. Quantity: Feeding an adequate volume (4 quarts to Holsteins; 3 quarts to smaller breeds) of colostrum;
3. Quickly: Feeding colostrum promptly after birth (within 1-2 hours and by 6 hours maximum);
4. Quietly: Passing the tube too quickly may result in damage to the laryngeal area and passage into the trachea and lungs. Keeping the calf calm minimizes the risk of aspiration pneumonia.

The esophageal feeder is a tool designed to deliver colostrum when a calf is unwilling or unable to consume the recommended amount of colostrum through nursing. In dairy calves, reliance on nursing is not recommended because a large percentage of calves do not obtain an adequate volume of colostrum. The inability or unwillingness to nurse may be due to a variety of causes. The process of calving may result in oxygen deprivation to the brain for a prolonged period of time, bruising, and occasionally broken bones. An extended period in the birth canal can result in a swollen head and a swollen tongue that cannot suckle. Exceptionally cold

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weather may also contribute to delayed nursing. Large teats may be difficult for a calf to suckle. Regardless of the reason, colostrum delivery can be accomplished quickly and safely with an esophageal feeder if proper technique is followed. The steps involved in using an esophageal feeder are as follows:

1. Prior to tubing the calf, examine the feeder to make sure it is clean and undamaged.
2. The length of the tube and the size of the calf will dictate how far the tube should be inserted. Compare the tube length to the distance between the mouth of the calf and the point of the shoulder. This is the approximate distance the tube should be inserted.
3. The calf should be standing if possible. Place its rear end into a corner and hold its head between your knees. If the calf won't stand, at least sit it up on its sternum (breastbone) and hold the head between your legs.
4. To insure that no fluid runs into the mouth of the calf that could be inhaled in the lungs, either kink the plastic tubing or clamp it off during passage.
5. Moisten the end of the feeder (the ball) with colostrum to make it more slippery.
6. Stimulate the calf to open its mouth by putting pressure on the gums or pressing on the roof of the mouth with your fingers. Do not hold the nose up; keep the nose below the ears to reduce the risk of trauma to the back of the throat.
7. Gently insert the tube into the mouth over the top of the calf's tongue. When the rounded end hits the back of the tongue where there is a ridge, the calf should swallow. Wait patiently until the calf swallows then slide the tube gently down the esophagus.
8. Prior to administering the colostrum, check that you feel the tube in the esophagus on the left side of the calf's neck. You should feel two tube-like structures in the neck. The trachea (or windpipe) is firm and has ridges of cartilage all along its length. The esophageal feeder tube in the throat is firm but smooth.
9. Administer the colostrum by raising the bag above the calf and allowing the fluid to flow by gravity. Never squeeze the bag to hurry the process. The calf will begin to move (and vocalize) when it feels pressure as the rumen fills. The amount of colostrum needed depends on the size of the calf. Holsteins can readily handle 4 quarts while smaller breeds need approximately 3 quarts. Do not remove the tube until the fluid has had time to empty into the rumen.
10. Again, kink the plastic tube or use a clamp before pulling the tube out in one swift motion.
11. Immediately wash the tube and feeder in hot, soapy water and use a brush to scrub all parts that were in contact with colostrum. Follow with a chlorine and hot water rinse in order to remove any remaining film of fat and protein that adheres to the inside of the feeder. If not properly cleaned and disinfected, you risk inoculating bacteria directly into the intestinal tract when a calf is most vulnerable to infections.
12. Keep the feeder in good repair-change them when they begin to show any signs of wear.

Esophageal feeders come in a range of sizes and designs, depending on whether to be used in calves, yearlings or adult cows. The calf esophageal feeder generally consists of a plastic pouch or bottle which holds the colostrum with an attaching plastic or stainless steel tube and a ball or bulb on the end. Four quart capacity feeders are recommended to deliver colostrum because recent research has proven a full dose administered all at once is much better than two smaller feedings. In the past it was thought that feeding smaller volumes of

colostrum by a nipple was best because it stimulated closure of the esophageal groove and absorption of immunoglobulins was increased if the rumen was bypassed. It is now understood that there is no difference in absorption when colostrum is administered by esophageal feeder because the colostrum quickly spills out of the rumen into the abomasum. Ultimately, 48-hour serum immunoglobulin concentrations were found to be no different in bottle-fed or tubed calves.

In summary, learning to use an esophageal feeder may mean the difference in life or death to a newborn calf. Esophageal feeders can also be used to administer vital electrolytes to scouring calves if reluctant to nurse a bottle. Videos are available on U-tube that show the process http://www.youtube.com/watch?v=ndj8O7_j6j8 or <http://www.youtube.com/watch?v=GLHOe6xlnJg> but your veterinarian is the best resource to teach the proper technique for passing a tube correctly and safely.