

CALVING EASE

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COLOSTRUM: THE 4 QUART MYTH (First of Two Parts)

The 4-quart myth has gradually emerged during the past ten years. The myth says: “If you feed four quarts of colostrum to a Holstein calf shortly after birth she will live and be healthy.” Bunk!

Let’s take a moment to review some basic colostrum and immunity biology. That way we will all be on the same page when we go over the reasons below. The connection between the cow’s uterus and the calf’s placenta doesn’t allow antibodies to pass from the dam to calf. But cows usually make up for this. They concentrate lots of maternal immune cells and antibodies in the udder. This happens during the last two weeks prior to calving. When we feed colostrum to a calf these antibodies and maternal immune cells flood the gut. By means of a special mechanism the antibodies and maternal immune cells slide through the gut wall into the lymphatic system. This works best right after birth. It stops by the time the calf is one day old. The antibodies and maternal immune cells in the lymphatic system provide the newborn calf with immunity. We call this “passive transfer.” Now, let’s look at some reasons why such a marvelous system fails even if we feed lots of colostrum shortly after birth.

One reason the myth is false.

What happens when a calf gets adult cow manure in her gut before her colostrum? The coliform bacteria from the manure clog up the mechanism that is supposed to transfer antibodies into the lymphatic system. Where does the manure come from? Manure in the calving pen. The calf sucking on the cow’s dirty hair coat. Manure on teats. **If too many coliform bacteria get into the gut before colostrum no amount of colostrum will turn a bad situation into a good one.** This situation is common when calves are left for a long time in the calving area.

Another reason the myth is false.

What happens when a calf is fed colostrum containing large numbers of bacteria? These bacteria clog up the mechanism that is supposed to transfer antibodies into the lymphatic system. Where do the bacteria come from? The cow – left over staph and strep bacteria from residual mastitic infections that survived the dry period. The cow's teats when milked. The bucket a milker used to collect colostrum. If colostrum is not properly cooled coliform bacteria will double their numbers every twenty minutes. **If the colostrum is badly contaminated the greater the volume of colostrum fed the sicker the calf.** This situation is common where communication is poor between the persons who milk the fresh cows and care for the colostrum and the person that feeds colostrum to the calves.

Yet another reason the myth is false.

What happens when a calf is fed four quarts of colostrum with a low concentration of antibodies? There are so few antibodies that even if a high proportion of them were transferred the calf would not be adequately protected from pathogens. To make matters worse, we know that the transfer rate of antibodies for poor quality colostrum is lower than for good colostrum.

Why is there so much poor quality colostrum? Well, younger animals give poorer colostrum than cows. Two out of three heifers give poor quality colostrum. Nearly a third of second lactation cows' colostrum is of poor quality. Even among more mature cows poor quality colostrum is likely in one out of seven cows.

A few farms do measure antibody concentrations in colostrum. Others sort colostrum on the basis of dam's lactation and volume given at first milking. All these farms separate colostrum by quality and feed the best to heifer calves. Most farms feed unsorted colostrum. **When these farms feed four quarts of either heifer or cow colostrum without evaluating it for antibody content the passive transfer failure rate will probably be between twenty-five and thirty percent.**

References: Besser, T.E and C.C. Gay, "The importance of colostrum to the health of the neonatal calf" in Veterinary Clinics of North America: Food Animal Practice, 10:1 Perinatal Mortality in Beef Herds, March 1994. Kehrl, M.E. and J.A. Harp, "Immunity in the mammary gland" in Veterinary Clinics of North America: Food Animal Practice, 17:3 Immunology, Nov. 2001. Levieux, D and Alain Ollier, "Bovine immunoglobulin G, Beta-lactoglobulin, Alpha-lactalbumin and serum albumin in colostrum and milk in the early post partum period" Journal of Dairy Research 66:421-430 1999. Tyler, J.W. and Others, "Colostrum immunoglobulin concentrations in Holstein and Guernsey cows," American Journal of Veterinary Research Vol. 60 No. 9 Sept 1999.

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