CALVING EASE

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Loopholes that Make Calves Sick

Everyone knows the legalistic definition of a loophole. It is "an ambiguity (especially one in the text of a law or contract) that makes it possible to evade a difficulty or obligation." In a calf care program a loophole is an ambiguity in a calf care protocol that makes it possible for bad things to happen.

Let's look at a few of these that have surfaced in my travels this past spring. **Number One:** A dairy had a high rate of scours among calves less than ten days of age. When cultured for bacterial contamination the colostrum checked out clean. But, when we cultured the milk replacer being fed from nursing bottles (calves were not started on pails until they were about one week old) most of the samples contained over 10,000 cfu/ml of coliforms. The milk replacer powder was clean, the five-gallon mixing pails were clean, the mixing whip was clean and so were the bottles and nipples. Where were the coliform bacteria coming from? I took time to watch a person bottle feed the youngest calves. All went well until a calf gave the feeder a hard time. What happened? Sit down the bottle, push the calf into a corner, pick up the bottle and coax the calf to nurse. Then, (this is the important part) the bottle was refilled by dunking it into the five-gallon pail! Of course, now it is evident that the manure on the bottom of the bottle was contaminating the milk replacer. Solution: carry a five-quart pail along with the bottle, sit the bottle in the bucket when working with the calf. The protocol did not anticipate the need to sit down bottles when handling calves. The other solution of pouring milk replacer into the bottle was not used but clearly would have solved the problem equally well.

Number Two: A dairy had a high rate of scours treatment among calves between seven and fourteen days of age. Fecal testing showed moderate to heavy concentrations of heavily encapsulated E. coli among these calves. Colostrum replacer was being fed. Feeding equipment checked out clean. When cultured for bacteria the milk replacer had very low bacteria counts. All the hutches were pressure cleaned between calves. The hutch sites had manure scraped away and fresh stone was added. Where were the coliform bacteria coming from? No definitive answer has yet been found to account for all contamination. However, we did observe one "loophole." After the front-end loader finished removing the manure and loading it out into a spreader, the same loader promptly went to a pile of stone. Stone was scooped up in the bucket – what else was in the bucket? Manure. Then the stone was dumped as a base for the hutches – what got dumped in addition to the stone? Manure. Solution: when handling stone, either use a different loader (such as one used for handling feed) or clean up the bucket on this one. The procedure did not anticipate residual contamination of the bucket.

Number three: A dairy had an inconsistent rate of scours among calves less than fourteen days of age. Some calves were quite sick while others had no scours symptoms at all. Sanitation procedures for all

the equipment used to collect, store and feed colostrum were being followed without exception. The same was true for milk replacer mixing and feeding equipment. After collection the colostrum was being chilled using bottles of ice before being placed in a household-type refrigerator. The outsides of the ice bottles were clean. Hutches were being high temperature high pressure washed between calves. Hutches were moved to a vacant area between calves with a fresh stone base. We cultured both colostrum and pasteurized milk for bacteria. The milk came back just fine. The colostrum samples were a mixed bag. Some had very low coliform counts. Others had very high coliform counts. What would account for the variation? On close observation it turned out that the amount of ice remained the same regardless of the amount of colostrum harvested. Two 16-ounce bottles went into the stainless steel bucket. That is the proper amount to chill one gallon of colostrum to 60° within one-half hour [that is the desired goal]. What happened when the cow gave three or more gallons? Two ice bottles were still used. The result? Sometimes colostrum went into the refrigerator at or below 60°. However, other times the colostrum was quite warm when it was bottled and put into the refrigerator. Our colostrum chilling work showed that as small amount as one gallon of colostrum put into a refrigerator at 90° may take over two hours to reach even 60°. In this case at times putting 4, 6, 8 or even 10 bottles of 90° into the refrigerator at one time allowing even small numbers of coliform bacteria to multiply into 10,000's before the chilling slowed things down. Solution: add ice in proportion to the amount of colostrum collected. That is, add one quart of ice per gallon of just-harvested colostrum to get it down to 60° within a half-hour. At 60°the coliform generation time becomes 150 minutes rather than 20 minutes at collection temperature. The protocol did not recognize the variability in the volume of colostrum collected.

Number four: A dairy had a persistent problem with scours among all seven to twenty-one day old calves. We sampled and checked "as-fed" colostrum for bacterial contamination. Clean. Calves were being removed from the calving pens promptly. Good quality colostrum was being fed in adequate volume with four hours of birth. Navels were being dipped with tincture of iodine before leaving the calving area. Pens in the barn were cleaned and disinfected between calves. Ventilation in the barn was good. When we analyzed a sample of the "as-fed" milk replacer it was clean, too. What a puzzle. Then, for a week we took an "as-fed" milk replacer sample at every feeding. We found the AM feeding samples to be contaminated with coliforms, Staph species and Strep species while the PM samples were nearly "no growth." Out came the rapid read thermometer. In AM before the feeding equipment was washed the calves were fed grain, pens were bedded and the hot water heater recovered. The wash water never got below 130°. In PM the equipment was washed just as soon as the milk replacer and water were fed. The wash water never got up to 110°. Equipment used to feed in the morning was consistently contaminated. Solution: the household hot water heater was replaced was replaced with a rapid recovery unit. The protocol did not anticipate the difference between AM and PM routines.

Moral of the story: almost all of our on-farm protocols have little "loopholes" that allow errors to creep into our calf care procedures. Want to have fun? Ask a non-farm friend from a village or city to watch you perform a task and ask questions. You will be amazed at what they see!

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