



COW SENSE CHRONICLE

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WHAT'S IN THAT PRE-CALVING VACCINE?

Happy New Year! This issue marks the start of the 4th year of Cow Sense Chronicle - thanks for reading! Calving season is near, and some operations may have already started. This month, we'll focus on pre-calving vaccines and what they contain.

First, I would recommend consulting with your local veterinarian as they will be a great resource for knowing what types of pathogens are common in your area and can make recommendations for what type of vaccine to use. That said, the most comprehensive pre-calving vaccines include rotavirus, coronavirus, *Clostridium perfringens* type C, and K99 *Escherichia coli*. A primary goal of pre-calving vaccinations is to allow the cow to build antibodies that will be passed along to her calf through colostrum.

As their names indicate, coronavirus and rotavirus are both viral causes of calf scours. Both viruses disrupt cells lining the small intestine, resulting in diarrhea and dehydration. Coronavirus also damages cells in the crypts of the intestine where new cells are produced, thus slowing healing of the intestinal lining. Damage is often compounded by bacterial infections. Mortality risk is increased when mixed infections occur. Calves as young as one to two days old may be affected; most outbreaks occur when calves are near a week old or older.

E. coli and *C. perfringens* are both bacteria. *E. coli* is the primary bacterial cause of scours in calves during their first week of life. Most newborn calves are exposed to *E. coli* from the environment. Calves as young as 16 to 24 hours can be exposed via manure from healthy cows and stools from scouring calves. The younger the calves, the greater the chance for death from severe dehydration. K99 refers to a virulence factor that *E. coli* possesses on fingerlike projections on the outside of the pathogen cell that enables it to attach to and colonize the villi of the small intestine in neonatal calves.

C. perfringens infections are commonly known as enterotoxemia. Enterotoxemia is fatal and caused by toxins released by various types of *C. perfringens*. Type C produces the highly necrotizing (causing tissue death) and lethal beta toxin responsible for severe intestinal damage. The disease has a sudden onset and generally occurs when a hungry calf (usually < 1 month old) who has not nursed for a longer period of time than normal over consumes milk. The large amount of milk in the gut establishes a media conducive to growth and production of toxins by clostridial organisms. Bloody diarrhea may or may not occur. In many cases, calves may die without any signs being observed.

As always, be sure to read and follow label directions. Some pre-calving vaccines need to be administered 8-10 weeks before calving while others are labeled for 3-6 or 5-7 weeks before calving. It is important to allow the cow adequate time to respond to the vaccine and create high quality colostrum. Remember that non-infectious factors may contribute to scours outbreaks, including inadequate pre-calving nutrition of the dam and a poor environment for the newborn (wet weather, contaminated lots, etc). Control of non-infectious factors is critical to preventing scours. Vaccines will not fix poor management.

Questions for Rachel?
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