



Vaccination **Loop** Holes

Vaccinations work, but vaccines have to be stored correctly and given to an animal which can gain the necessary immunity

by RAY REYNEN, DVM

HEY DOC, "The calves just broke with IBR but I bought them at a pre-vaccinated sale."

Hey Doc, "I thought this scour vaccine stuff was going to fix all my scour problems!"

These comments and many like them are not uncommon when dealing with some disease outbreaks. Quite often we forget that there is a big difference between injecting an animal with a vaccine and properly immunizing against an infectious disease. To properly immunize a cow or calf we must ensure that we:

- Handle the vaccines appropriately,
- follow the administration instruction properly,
- inject into a healthy animal, and
- use an appropriate vaccine for the disease challenged expected.

Handling vaccines appropriately may seem rather simple – keep refrigerated until needed; however, the full version for

most vaccines is store between 2 – 7C, avoid from freezing and for some, store in the dark.

Simple yes, but when is the last time any of us checked our fridge's temperature. To check properly we must check on the shelves and in the door and multiple times throughout the day as all fridges have a cyclical fluctuation in temperature.

Work done by Dr. Neil Anderson, OMAFRA Veterinary Scientist and Tamara Keeley, Research Assistant, a few years ago showed a marked variation in cooling abilities of fridges. Four fridges were tested and only two maintained a safe storage range for vaccines for a whole day. Generally the doors were warmer than the shelves; however, the shelves achieved freezing temperatures occasionally.

Leaving the fridge door open 1-1/2 minutes did not affect shelf temperature significantly; however, the temperature on the door increased 10C and took 15 minutes to return to normal. More work done by Neil Anderson, DVM et al showed that fridgerated water rose to 10C after 20 minutes in a

50ml vial or to 10C after 35 minutes in a 100ml vial when placed at room temperature.

So, if it is a warm day when we are processing our herd (i.e.: above 20C) our vaccines will leave their ideal storage temperature only after 20 to 35 minutes.

Following administration instruction again may seem real straightforward; however, it is easy to do inappropriately. Were all boosters given, if needed? Was the proper dosage injected?

Was it injected by the proper route? (i.e.: intramuscular vs. subcutaneous vs. intranasal). Was the scour vaccine given the appropriate time before the expected calving? PS Scour vaccines only make the colostrums stronger, so did the calf receive enough colostrum soon enough after calving?

Was the calf that was vaccinated old enough (i.e.: 6 months) to properly respond to the vaccine? Vaccinating under 6 months of age is a common

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problem with light weight beef calves. The 6-month age is important to ensure that maternal colostrum protection has subsided enough.

For example, if we get a group of calves vaccinated with a killed vaccine (appropriately boosted) at 450 lbs. they were probably too young to respond to the vaccine.

To explain this, please follow the math:

- calf born at 90 lbs.
- calf needs to be six months old to ensure responding to killed vaccines
- calf at 180 days old, gaining 2.0 lbs./day (below average gain)
- thus, a calf at 180 days (6 months) will weigh:
90+ (180 x 2.0)
90+ 360
=450

If the calf was vaccinated two and four weeks before the sale, both injections were given before the colostrum protection had subsided enough. If the calves were gaining well and given killed vaccine, a 500 lb beef calf could be too young to be properly protected.

Thus we commonly do it, but vaccinating light weight calves does not properly follow the administration protocols for most vaccines.

The cattle need to be old enough to respond but the cattle need to be healthy as well. Cows or calves need to be fed properly to respond properly. Cattle need to be receiving an appropriate ration with proper mineral supplementation to respond properly to the vaccine.

Lastly, we need to use the appropriate vaccine for appropriate challenge.

Again this is simple but... For example, if we are dealing with BVD we need to start our vaccination program properly before the calf/cow is even an embryo in her mother. Our best approach to BVD is to prevent the carrier state, the PI (persistently infected) animal.

This is best done by using a modified live vaccine before the cow is bred. Modified live vaccines have

roughly double the efficacy for fetal protection vs. killed vaccines.

Some of the modified live vaccines on the market have a near perfect efficacy for fetal protection in a research setting. After being born the cattle should be vaccinated at 6 months and just before every breeding season.

This sounds nice but does it work? Yes, data supplied by Dr. Rob Bell, Pfizer Animal Health shows that feedlot calves (5,386 head) that were from herds with complete pre-breeding modified live vaccination program had morbidity rate of 8.2% and a mortality of 0.5% versus calves (2,189) head that were just prevaccinated (no herd program) that had a morbidity rate of 20.5% and a mortality rate of 0.8%. Each disease we are vaccinating for can have protocol that best makes them match the disease challenge. Each vaccine program for each herd needs to be tailor made to the disease challenge on each particular farm.

So, the next time when a vaccine apparently did not work we should check that we are following the proper protocols to handle, administer and match the proper vaccine for the proper well fed animal. *teef*