Vaccine handling and syringe care

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Vaccine handling and syringe care determine how effective your vaccinations will be.

Your local veterinarian is the best source of information on vaccine care and what vaccination protocols are appropriate for your cattle.

There are two general types of vaccines used in cattle; Live and Killed. They both must be handled with care to insure that your cattle are properly vaccinated. You should make certain you purchase all vaccines from reputable sources that handle vaccines correctly. If vaccines have not been maintained at cool temperatures during shipping they may be destroyed and your efforts to vaccinate your cattle will be wasted.

Vaccination effectiveness is dependent on both animal factors and vaccine factors. Animal factors include age, condition, sickness, worm burden and stress. Vaccine factors include vaccine temperature, exposure to sunlight, vaccine mixing in a clean syringe, contamination of the vaccine in the syringe or bottle, and the length of time the vaccine is mixed.

Vaccines are tested on healthy, well nourished animals of the correct age. If cattle are under 4-6 months old they may still have some of the antibodies that they received in the colostrum. These colostral (maternal) antibodies will block the effectiveness of vaccinations. Vaccines are composed of unique bacterial and viral structural protein complexes and animals respond to vaccination by producing antibodies to these protein complexes. If there are still colostral antibodies in the calf, these antibodies tie up the protein structures of the vaccine and prevent the calf from producing immunity when vaccinated. About 40% of calves can respond to vaccination at 3 months of age, by 4 months about 80% respond and by 6 months over 90% of the calves respond. **It is important to remember that even in healthy well nourished animals some cattle just do not respond to vaccinations**. Cattle that are sick, stressed, wormy or poorly nourished will respond poorly to a vaccination program.

Vaccines contain either killed or modified live viruses and/or bacteria. Both viruses and bacteria in these vaccines are made of protein complexes that have a very specific structure. If this structure is changed the effectiveness of the vaccine is greatly decreased. To be effective, killed vaccines require a large number of bacteria or viruses to be injected into the animal and modified live vaccines must have live viruses/bacteria to replicate once injected into the animal. All of the structure of the vaccine must be intact for the vaccine to maintain its effectiveness. If the temperature of the vaccine is above refrigeration temperature or the vaccine is exposed to sunlight for too long the structure of the protein complexes is altered and the vaccine loses its effectiveness. Detergents, soaps and disinfectants will kill modified live vaccines and/or alter the structure of the protein complexes in both killed and modified live vaccines. Cleaning a syringe with detergent and rinsing it a few times will leave enough detergent in the syringe to kill the virus or bacteria in a modified live vaccine and may change the structure of the protein complexes in a killed vaccine, making the vaccine ineffective.

It soon becomes apparent that vaccination is more than just injecting a calf with a product.

Killed vaccine (bacterial and viral vaccines) handling requires that the vaccine is maintained at refrigeration temperatures and protected from sunlight at all times. Repeated syringe filling and needle puncture of the vaccine bottle may also carry contamination into the bottle. You need to change needles often when vaccinating and if you changed to a new needle

each time you refilled the syringe you could reduce any contamination of the vaccine in the bottle.

Live Vaccines (bacterial and viral) must be kept refrigerated until used since they can be easily be destroyed by heat. Live bacterial vaccines (like Pasteurella) are destroyed if the cattle have any antibiotics in their body either from antibiotic injections or feeding antibiotics. So avoid antibiotics five days before and ten days after giving live bacterial (Pasteurella) vaccines. Live vaccines begin to loose potency as soon as they are mixed up. You should try to use vaccines within one hour of mixing.

Syringe care and cleaning is a major component of vaccine effectiveness. Live viral vaccine and live bacterial vaccines are extremely sensitive to detergents, antibiotics, or drugs remaining the in syringe. **Live viral vaccines can also be destroyed when they are drawn into a syringe that had a killed vaccine or an antibiotic in it**. Detergents, soaps, antibiotic solutions, substances in killed vaccines, and disinfectants destroy the structure of killed or modified live vaccines. Syringes should be cleaned by washing with a detergent or soap (the out side only), disassembling, placed in boiling water, the plunger lubricated with clean Vaseline and assembling them in a clean dust free area while they are still hot. They should be stored in a new zip-lock bag in the freezer.

Never get any detergent or disinfectants inside the syringe. Never use a syringe for a vaccine that has had an antibiotic in it. Never use a syringe for a modified live vaccine that has had a killed vaccine in it. All of these procedures will destroy the effectiveness of a vaccination program. Never mix up more modified live vaccine than you will use in the next hour.

Always use a sterile syringe that has not had other vaccines or antibiotic in it, be especially careful not to get detergents or soaps in the syringe. Always keep vaccine refrigerated. Use correct needle size. (16ga – 18ga and ½ - 1 inch) Change needle often. BVD and Bovine Leukosis virus can be spread with needles so ideally you should change needles on each calf. Give all cattle injections in the neck area, never on the top line or the rear of cattle.

These procedures will make the effort you expend on a vaccination program more effective.