

Vaccines, in general, are a great tool for preparing calves to respond to a disease challenge. However, developing a sound immune foundation in calves requires multiple tools working together. The most common reasons why vaccinated calves still get sick or fail to fully respond include, but are not limited to nutritional imbalances, age, stress level, genetics, improper vaccine type, improper timing or route of administration, and/or improper handling of vaccine. This guide will address the handling and administration of vaccine.

In most weaning vaccination schedules, modified live vaccines (MLVs) have become an industry-recommended standard to help build immunity against viral bovine respiratory disease (BRD) pathogens. The use of MLVs, rather than killed vaccines, in weaning vaccination programs for calves is typically recommended because MLVs (1) provide a longer and more comprehensive immune response, (2) are administered in a smaller dose, and (3) are typically less expensive.

While MLVs provide the most **bang for the buck**, it is important to take note of strategies to increase their effectiveness in your weaning vaccination schedule. Rest assured, companies producing and distributing MLVs have done their homework (and checked it) to ensure their products, when handled and administered properly, will achieve a desirable and realistic level of effectiveness. The live viruses commonly used to build broad spectrum immunity against BRD require a minimum number of each virus to replicate and stimulate the immune system. However, because these live viruses are susceptible to damaging effects of excessive heat, ultraviolet (UV) light, and disinfectants, improper handling could kill enough viral particles within a bottle of MLV that a single dose would no longer

contain a sufficient number of live viruses to properly immunize the animal. The following are a list of items to consider and review before you purchase and use MLVs at weaning.

Select high-quality products. Do not settle for what is available in the cooler. Do some product searching and look for credible research comparisons between commercially available MLVs. Consult a local veterinarian, followed by university Extension specialists, to help you reason through product data objectively.

Read product labels. Companies spend big dollars on label development. The label will provide essential information regarding vaccine type, dosage, injection method, storage temperature, and an expiration date. Don't take a chance with expired products.

Refrigerate and keep cool. All vaccines must be kept cool. When buying vaccines at a local establishment or via mail order, ensure they are cool at the time of purchase or arrival. Maintain the vaccines in a cool environment on the drive back to the ranch. Keep vaccines refrigerated until use. At processing, ensure all vaccine (mixed and unmixed) stays cool until the vaccine is administered. Store multi-dose syringes with vaccines in a closed, portable cooler at chute-side. Do not freeze vaccines as freezing will destroy them.

Protect from sunlight. Never allow vaccines to sit in direct sunlight (e.g., on dashboard, seat, tailgate, working table). Since most operations in the Southwest do not have covered facilities to process calves at weaning, storing vaccines in a cooler with ice packs is the most desirable means to handle vaccines. Use caution and do not lay the multidose syringe in the sunlight between calves, as UV light will kill MLV vaccines.

¹Extension Livestock Specialist and Extension Veterinarian, respectively, both of the Department of Extension Animal Sciences and Natural Resources, New Mexico State University.

Mix properly and only what can be used in thirty minutes. Mix MLVs according to label recommendations. Using a transfer needle is an inexpensive means to minimize contamination. Once the diluent and freeze-dried MLV fraction are combined, do not shake vigorously into solution; instead, swirl gently until all freeze-dried fraction has completely dissolved. Furthermore, mix only enough MLV to be administered in 30 minutes. Even properly handled MLVs will begin to lose effectiveness shortly after being mixed.

Administer the MLV product properly. Follow the label guidelines for proper route and timing of administration. It is of the utmost importance that MLV vaccines be administered correctly. Use the proper route—(intramuscular) IM or subcutaneous (Sub-Q)—and the recommended needle gauge and length. Change needles frequently and **always** follow proper beef quality assurance guidelines when any product is administered to cattle.

Use quality assurance guidelines for syringes and needles. Consider using multi-dose rather than continuous fill syringes when administering vaccines at weaning because multi-dose syringes can be easily stored in a cooler. To minimize contamination, never draw vaccine out of a working bottle (bottle with mixed vaccine) with a used needle. Appropriately label and check calibration of syringes to avoid mixing different types of vaccines and to ensure adequate doses are being administered. After each use, only use boiling water to disinfect syringes. Do not sterilize syringes with chemical disinfectants (e.g., soap, bleach, nolvasan, alcohol, betadine) as they will kill the viral particles in MLVs.

In closing, remember that the effectiveness of a herd health program will only be as strong as the relationship between a ranch manager and a cooperating veterinarian. Regular consultation with a cooperating veterinarian is the key to adapting a herd health program to fit your operation.

Access http://aces.nmsu.edu/pubs/_b/ and <http://aces.nmsu.edu/bqa/> for additional Extension publications and materials related to herd health and management.

Contents of publications may be freely reproduced for educational purposes. All other rights reserved. For permission to use publications for other purposes, contact pubs@nmsu.edu or the authors listed on the publication.

New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.