

# Chute Side Cattle Working

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It is not uncommon to hear about ranches having poor results backgrounding calves because of failures in their vaccination program. There are numerous explanations for these failures: exposure to high levels of pathogens, stress level, age, nutritional balance, genetics, poor quality vaccine and poor vaccine handling.

The highest quality vaccine available is useless if not handled and administered properly. Most producers overlook many aspects when preparing and administering vaccines. With the increase usage of Modified Live Virus (MLV) and chemically-altered (CA) vaccines means many producers need to reevaluate how they handle products. Both MLV and CA products must be reconstituted with a sterile diluent prior to being administered to cattle. These products are routinely used in the stocker and feeder segments of our industry with excellent response. However, processing speed is considerably faster than on most cow-calf operations. Processing facilities are also more likely to be sheltered from exposure to environmental hazards during processing. Most cow-calf operations lack covered or protected working facilities. Therefore, ranchers must exercise more caution when handling and administering MLV or CA products. Many common handling techniques can render MLV products inactive and even greatly reduce the effectiveness of Killed (K) vaccines and bacterins. Avoid these common mistakes made in procurement, storage, handling and administration of vaccines into cattle. Remember, vaccination alone does not guarantee immunization.

## **Select the Best Product:**

Purchase vaccine from a reputable dealer. Vaccine will be less than 100% effective if it has ever been unrefrigerated since manufacture. Without refrigeration for any extended period of time, vaccine loses 100% of its effectiveness.

Maintaining a high level of efficacy is critical to establishing immunity in a majority of vaccinated cattle. For example, if the vaccine is only 80% effective and 80% of the cattle respond to the vaccine, only 64% ( $80\% \times 80\%$ ) of the vaccinated animals are protected against the targeted pathogen. Management practices can increase the percentage of cattle that respond to vaccine and greater efficacy of the vaccine greatly enhances immune response. Reducing exposure, stress, improved nutritional management, along with proper timing of vaccination, will increase the response rate to vaccine.

## **Keep it Cold and in the Dark:**

When purchasing product, always transport it in a closed, refrigerated container. Refrigerate vaccine and shield it from UV exposure between purchase at all times until it is administered to an animal. Use cool packs in transport of vaccine. These should be available to the purchaser at point of purchase.

## **Protect Vaccine Chute side:**

Most ranches fail to handle vaccines correctly at the time of vaccination. Always keep vaccine and syringes refrigerated while processing cattle. Keep working bottle in a cooler with syringes. A working bottle is the mixed product from which the vaccine is drawn into a syringe. Store all unused and unmixed product in a closed refrigerated

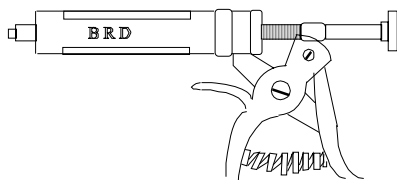
container until needed. Never mix either MLV or CA product before it is needed. Mix only enough to be administered within thirty minutes. Mixed, vaccine begins to lose effectiveness in a relatively short period of time.

#### **Don't Disinfect with Chemical Sterilants:**

Do not disinfect syringes or needles with chemical sterilants. All sterilants will kill MLV vaccines and cause damage to K products. Sterilizing syringes with chemical sterilants is a common practice that must be stopped. Only use boiling water to disinfect syringe components. Do not use alcohol, soap, betadine, nolvasan or chlorox to clean or disinfect the syringe. Residue left in the syringe alters the effectiveness of the product it comes in contact with. Although this contamination predominately affects the first draw, it could impact the immunization of several animals. A 50cc syringe would impact from 10 to 25 animals depending on whether it was a 5 or 2cc dose rate.

#### **Use Sterile Syringes:**

Selecting the appropriate syringe is very important in development of a sound vaccination program. Multiple dose syringes, such as shown in Figure 1, or sterile disposable syringes are appropriate for administering sensitive vaccines.



*Figure 1. Multiple dose syringe.*

Multiple dose syringes need to be completely disassembled after each working. Do not use disinfectants to clean components. Disassemble and boil components to sterilize. Disposable syringes can be rinsed and autoclaved to sterilize for reuse. After sterilizing, reassemble syringes and store in a clean dry environment until needed. If not, re-sterilize prior to next use. Many continuous feed syringes cannot be cleaned effectively because they

can't be disassembled and boiled. However, they can have boiling water drawn through them to effectively clean these syringes. Not as good as cleaning disassembled syringe components, it often damages the syringe. Even if a continuous feed syringe can be disassembled and adequately disinfected, several other problems remain with this type of delivery mechanism. Sterilized disposable syringes ensure a sterile delivery instrument. These plastic syringes can be very accurate used as a single dose delivery system. However, when used for multiple dose delivery, they can be very inaccurate. For example, a 5cc syringe effectively delivers either single 2 or 5cc product doses, but administering multiple doses, often leads to over or under dosing when vaccinating one animal resulting in improper dosing of subsequent animals. This problem is magnified when using 10 to 60cc syringes. One disadvantage of plastic syringes is the tendency for the tip to break while vaccinating an animal that jumps in the chute. When this happens, discard the exposed and contaminated product left in the syringe. Don't attempt to transfer the exposed vaccine into another syringe. It greatly increases the chance of contamination and reduces immunization in subsequent vaccinated animals. Draw a single dose for each individual animal. If breakage occurs, only a small amount of product is damaged. Leave a sterile needed in the working bottle when the bottle is left in the working cooler. Never re-enter the bottle with a used needle. To help prevent contamination of vaccine remaining in the working bottle, never enter a bottle with a used needle. A practice that should be adopted is the changing of needles prior to each filling of the syringe, when using multidose guns. This practice will prevent contamination of the bottle and help ensure a sharp needle is being used. If single dose or plastic syringes are being used, a sterile needle can be left in the stopper of the working bottle. The working needle will need to be removed and the syringe attached to the needle left in the bottle prior to each filling. Never re-enter a bottle with a used needle.

### **Lubricate with First Vaccine Draw- No Petroleum-Based Products:**

Use the first draw of vaccine to lubricate the syringe. Do not lubricate syringes with petroleum-based lubricants. This includes silicone, mineral oil, Vaseline or any other lubricant, whether it is petroleum based or not. All of these lubricants kill MLV or CA product. These products may also alter the quality of K products. This is another common practice which needs to be replaced with better techniques. If the plunger and stopper are so difficult to move that lubricant is necessary, replace the syringe, or at least the stopper.

### **Protect Vaccine from Heat and Light:**

Do not allow vaccine or syringes to sit in direct sunlight, even for a short time. Sunlight and ultraviolet light (UV) will destroy vaccines. Do not leave syringes on top of working tables, barrels or tailgates while performing other processing chores at the chute. Figure 2 demonstrates one method to keep syringes cool and out of direct sunlight while maintaining easy accessibility to syringes. Simply putting a syringe in a cooler while not working is a satisfactory procedure.

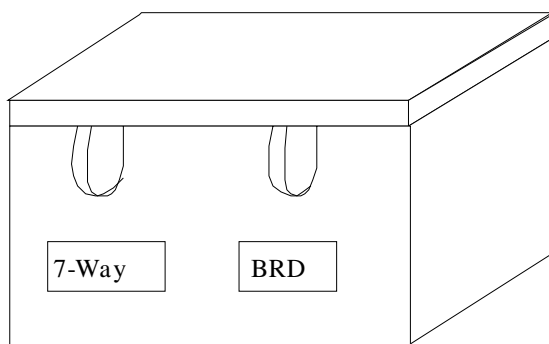


Figure 2. “Working Cooler” for holding syringes and vaccine. Proper syringe handling does not add significantly to processing time. If continuous feed syringes are used, the bottle, hose and syringe must be protected from exposure to UV light. It is very difficult to keep all components of a continuous feed syringe sheltered from exposure to the elements.

A better use of these syringes is for administering less sensitive materials, such as dewormers or antibiotics. Never use one syringe to administer antibiotics or dewormers one time and the next time administer MLV, CA or K products. Any residue effects the product. Avoid exposure of vaccine and syringes to heat. Sunlight heats up syringes dramatically. Always cool down syringes before the initial draw of vaccine. Carrying syringes in the cooler while going to the working facilities allows sufficient time for the syringe to cool before drawing up the first vaccine. If the needle/syringe is not in or going to an animal, put it in a cooler. If any delay occurs in processing, place syringes back in a cooler immediately. A cooler, as shown, keeps syringes from prolonged exposure to UV light throughout processing. Exposure would only occur from the cooler to the chute and back to the cooler. This brings up another problem with continuous feed syringes. How can the bottle and syringe and fill tube be kept cool and protected while carrying it chute side? Many times these bottles and syringes are suspended chute side in direct sunlight and exposed to heat during processing. This leads to excessive deterioration of the vaccine and animals not immunized adequately.

### **Mixing and Drawing Vaccines:**

When using MLV product, mix only as much as can be used in 30 minutes or less. MLV products must be used when mixed. They cannot be stored for later use. Killed vaccines can be stored for short periods of time after initial use but they should not be kept if anything other than a sterile needle entered the bottle during use. Use a sterile transfer needle to make the mixing of MLV and CA products easier. Transfer needles can be sterilized and re-used. Transfer needles ensure against product contamination during mixing. If a transfer needle is not available, use a sterile syringe to draw the diluent out of the plastic bottle and then place it in the glass vial. When using a transfer needle, always place the transfer needle in the stopper of the plastic bottle first, then invert the needle and diluent as the other end of the transfer needle is placed in the stopper of the glass vial containing the freeze-dried MLV fraction. The glass vial has a vacuum draw on

it that will be lost if the transfer needle is inserted into the glass vial first. Once the vacuum is lost, the diluent will have to be physically drawn and forced into the vial containing the freeze dried MLV fraction. Not only is this time-consuming, but also exposes the contents of the glass vial to outside air and dust particles contaminating the contents. After proper mixing, vaccine can be drawn from the glass vial in the dosing gun. Never draw from a bottle with a working needle that has entered an animal. While this is a common practice, it introduces non-sterile matter into the vaccine, contaminating the remainder of the bottle. Adopting the practice of changing needles before filling a syringe to keep needles sharp and the vaccine uncontaminated. Take two coolers to the processing area. Keep unmixed MLV vaccines and extra K product in a tightly closed, refrigerated cooler. Working bottles can be kept in the cooler with the syringes. Keep the working in the cooler on the same side as the syringe to avoid inadvertent mixing of product. This also reduces exposure of unused product to several changes in temperature and exposure to light during processing. Label syringes and the cooler box prior to processing to prevent accidental mixing of vaccine when refilling syringes. (See Figures 1 and 2.) Accidental mixing will result in under dosing and may render one or both of the vaccines ineffective. Mixing MLV product with a non-water based K product destroys the MLV product immediately. Mixing of product during processing occurs more often than anyone would want to admit. Attention avoids this if proper labeling is done. This may be one area where multidose (continuous feed) syringes offer an advantage over manual fill syringes, even though it does not compensate for the damage from continuous exposure of vaccine to sunlight and heat during processing.

#### **Inspect and Maintain Equipment:**

Always inspect syringes prior to processing. Check the barrels for chips or cracks which would lead to leakage and under dosing. Check calibration and dosage setting prior to and continuously throughout

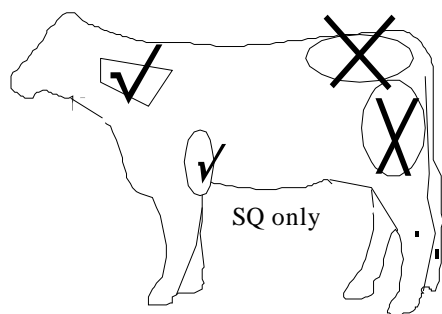
process. Some syringes can fluctuate dosage setting very easily, leading to under or over dosing.

#### **Read Labels - Dose Properly:**

Administer proper dosage of each product. Many products are now administered in low dose (2cc) volume to reduce injection site reaction. Many products are still formulated to be delivered in a 5cc dose. Some products may be 2cc when administered alone, but 5cc when other products are included in the dose. One example is found in the CA products Cattlemaster®4 and Cattlemaster®4-VL5. Cattlemaster 4 is a 2cc product while Cattlemaster®4-VL5 is a 5cc product. Always read label and dosing instructions prior to processing. Many products have changed their dose rate or approved route of administration during the recent past. Take time to become familiar with the products. Also, check for side effects and treatment should they occur. If cattle show side effects, there is little time available before death occurs. Quality and accurate calibration of syringes is vital. Even slight changes in working components change dose rates. Components can break or bend without being detected. Inspect carefully. Some multidose syringes are not accurate enough for low dose products. Always keep spare parts readily available in case something happens to the working syringe. Keep a supply of extra disposable syringes as an excellent backup delivery system.

#### **Minimize Injection Site Blemishes:**

Use the proper injection site selection and route of administration. When possible, administer vaccines in front of the shoulder. (Figure 3) Intramuscular (IM) injections should be given 2 to 3 inches below the top of the neck and 4 to 6 inches in front of the shoulder blade. Inject all IM products by inserting the needle perpendicular to the neck. Subcutaneous (SubQ) injections should be given in the neck region using the tent method or behind the foreleg in the elbow pocket. For more information on administering vaccine to cattle, refer to TAEX Bulletin B-5028, Administration of Medicine and Vaccine to Cattle.



*Figure 3. Appropriate injection site locations.*

Always use the smallest needle possible when vaccinating. Almost all beef cattle vaccines and antibiotics can be administered with one of two lengths (1 or 1½ inch) and one of two gauges (16 or 18 gauge). The smaller gauge number, the larger the needle diameter. A 16 gauge is a larger needle than an 18 gauge. Almost all MLV and CA vaccine are water based products. Eighteen gauge needles work well for water-based SQ only products. For oil based products, such as some antibiotics and a few vaccines, syringes work better when using a 16 gauge needle. A needle one inch in length will work for IM and SubQ injections in calves. A 1 to ½ inch needle should be used for IM injections in yearlings and mature cattle. Either a 1 or 1½ can be used for SubQ injections on older cattle. A ¾ inch needle will work for SubQ injections if care is used to make sure the needle entered the skin perpendicularly. If it has not, the injections may be given intradermally which will greatly reduce the chance of immunization occurring in that animal. If products can be given either SubQ or IM, choose the SubQ route of administration. It is less intrusive and less damaging to muscle tissue. Research has shown that tenderness is affected in a 2 - 3 inch radius around the injection site, even when a lesion is not observed. This is also why it critically important not to vaccinate in the hip or round. The industry cannot afford more bad eating experiences, particularly those so easily prevented. Follow label directions for all products. Booster vaccines and bacterins as outlined on the label. To establish immunity, almost all products require a booster vaccination 2 to 4 weeks after the initial vaccination. If a booster is require one initial dose

won't achieve immunity. This provides only a brief increase in resistance. Increased and sustained levels of immunity can only be established by boosting initial vaccinations. If the initial program is carried out properly, only an annual booster will be required after the first year. When a booster is not given following the initial vaccination, the annual booster provides a similar increase in resistance much like the initial vaccination. These are just the main factors associated with the success or failure of immunization programs. All of the above can be rendered ineffective if the nutrition, stress and genetic components of the immune system are not in proper balance. In depth information on how to manage these additional components of immunity are available. All are dependent upon the effective management of the total production system. There are no easy answers in cattle management. Truly it is an integrated management system. How well it works depends on the producer's ability to implement and manage all the components together.

<b>CRITERIA FOR EFFECTIVE VACCINATION</b>
Determine target pathogens Select the most effective vaccine
Prevent exposure of vaccine to heat and light
Use only sterile needles
Draw from bottle with sterile needle
Use quality syringes
Inspect and maintain all working components
Administer proper dose
Use proper needle size
Administer recommended route IM or SubQ
Administer in recommended site, neck region
Change needles often to reduce tissue irritation
Always follow label directions
Booster all vaccines when label requires it

<b>NEVER</b>
Leave vaccines in direct sunlight or UV light
Leave vaccines unrefrigerated
Place a used needle in a bottle of vaccine
Place vaccine in hip or upper round
<b><u>Not</u></b> read directions before starting
Assume anything, always check