Animal Health Product Failure *Due to Storage and Handling*

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As you use animal health products, keep in mind your ability to correctly use products determines its' ability to perform. Human error is often responsible for the perceived failure of a product.

Other than a veterinarian, labels are the next best source of information regarding animal health products. All products print storage directions on the label. Storing products in a secure area keeps them clean and safe from breakage, while reducing exposure to animals and humans. Correct storage maintains product ability to perform. Most vaccines require refrigeration. Many antibiotics do not require refrigeration and doing so renders them unsyringable and more painful to the animal.

Store products in the packaging supplied. Boxes keeps bottles clean and help labels stay on the bottle (moisture/humidity often loosens bottle labels). Keep all written instructions to refer to. The FDA expects you to be familiar with the entire label: which includes everything printed on the bottle, box and all inserts.

The label states handling instructions including warnings. For example, when it comes to vaccinations, pregnancy status of the animal may matter. Follow indicated withdrawal times.

IM products are to be given IM. SQ is the preferred beef friendly, but not all products are designed for SQ use. Administer one antibiotic per label or veterinarian instruction, using the correct dose/weight and dosage interval for the duration directed. Give time for the animal to respond. Being too quick to add another antibiotic reduces each product's effectiveness. Stopping too soon may allow a relapse to occur, with possibly a worse case because the bacteria not killed had time to multiply and mutate, incorporating drug resistance. Appropriately timed vaccine boosters establish lasting immunity.

Reconstituted modified live vaccine must be used within one hour of mixing; killed vaccine should be disposed of by the 10th day after opening (when stored correctly). To avoid inventory, calculate how many doses of a product are needed. Most labels warn to use entire contents when opened. All products have expiration dates; the date to when the manufacturer has proven efficacy, when stored correctly.

To avoid contamination, use transfer needles to reconstitute vaccines and don't put injecting needles back into any product's bottle. Do not mix multiple products within one syringe.

Some antibiotics and most vaccines should be stored in the dark, and stored and used under refrigeration from 35-45ºF. Storing vaccines at less than 35ºF is more detrimental than >45ºF because often times the antigen will separate from the adjuvant.

Keep products that require refrigeration cold after purchase, transporting in a cooler with an ice pack. When receiving mail orders, product must arrive cold on an unthawed ice pack. Maintain shade and stable temperature while using products by using a cooler in the summer with an ice pack and in the winter without an ice pack.

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A project by the University of Arkansas Cooperative Extension Service in 2008 studied 191 refrigerators used by producers, retail stores and vet clinics. Data loggers were used to record temps at 10-minute intervals over 48 hours. Of 191 refrigerators tested, 76% were unacceptable for storing animal health products because temperature was not consistently maintained between 35-45ºF. Refrigerator type and age were not critical factors in performance. Refrigerator location did matter: those in barns were coldest, those located in temperature controlled environments performed better. Refrigerator performance depends on maintenance. Dusty coils, clogged drain tubes, frost build-up and poor gasket condition cause refrigerators to work improperly. Full refrigerators perform better, but not packed too full: air movement around items is necessary for even chilling.

Keep your equipment clean during and between uses. Using clear hot water, rinse syringes during use as they become dirty or as you switch products. Don't rinse with soap or alcohol especially if using modified live vaccine, as the disinfecting action kills vaccine virus. After using non- disposable syringes, take the syringe apart, rinsing all parts in hot water and mild disinfectant (soap). Rinse repeatedly to remove all soap. Steam or boil syringe parts or wrap metal syringes in several layers of moist paper towel and microwave them. Air-dry and cool completely. Re-assemble and store in the freezer in a sealed plastic bag.

Needles are single service tools. When vaccinating multiple animals, change the needle every 5-10 animals, to maintain a sharp edge. Dull needles bend and break easier than sharp ones. Retrieve broken needles, they not only cause infection, but they may remain in the muscle until harvest; at which point they pose a threat to slaughterhouse employees and equipment. Call and inform the slaughterhouse of the

presence of a broken needle so they avoid that part of the carcass.
Properly dispose of used needles. Used needle containers may be supplied and returned to your veterinarian for a slight charge. Empty laundry soap or other hard plastic containers work well to store used needles. Check with your garbage company about their disposal.

When is the best time to administer animal health products? Bear in mind the intended market date for the animal. Usually antibiotics are not given to healthy animals, but withdrawl times are often determined using them. Sick, immune compromised animals do not metabolize antibiotics from their system as fast as the label claims. A sick animal may respond poorly to painful or multiple injections of antibiotics, further increasing their depression and decreasing appetite.

Some antibiotics have a metaphylaxis label claim: healthy animals receive antibiotics prior to stressful events to prevent secondary bacterial infections. This is often used in feed yards when receiving new calves. It is better to avoid the expense and labor of using antibiotics. Avoid multiple stressors, or spread events out with periods of time between. For example, don't dehorn, castrate, co-mingle, change the ration offered and location of the water all in one day.

Vaccinating calves prior to stressors may increase immunity to viral or bacterial attack when undergoing stress. It is recommended to vaccinate ahead, giving time for the immune system to respond. Avoid vaccinating and stress on the same day: don't dehorn, castrate, vaccinate and move calves to a new pen all in the same day.

Don't vaccinate when the outside temperature is over 85ºF. Keep in mind the heat index and the time delay cattle have in response to heat. Cattle internal temperature slowly rises during the day, peaking five hours after highest daytime temp. It is normal for a transient internal temperature of 103ºF following vaccination. You don't want cattle dealing with vaccine-induced fever and high environmental heat, which when combined could raise the animal's core temperature to 106ºF or higher. Fatal heat stroke may result.

Adverse reactions may result when injecting multiple products. Never mix two antibiotics or two vaccines in one syringe. An undesired chemical reaction may occur, destroying each product's effectiveness and causing a painful injection that result in a larger tissue lesion.

The withdrawl time may be unknown when using multiple injections. Extra time is required for multiple injection sites to heal; otherwise, lesions may be seen at slaughter, which triggers on-site swabbing for antibiotic residue. Vaccines often contain trace amounts of antibiotic preservatives.

Some multivalent vaccines have 10 or more strains of viral and/or bacterial component in them. One dose of a multivalent product plus two other monovalent products is probably safe to administer on one day. Holsteins are perhaps the most fragile of cattle breeds: suffering the most documented adverse reactions to multiple dosing of mono- and polyvalent vaccines. Talk with your veterinarian about a safe vaccination protocol.

Manufacturers put a well-researched, safe product in the bottle. Animals may not be in the correct condition or immune state to respond as desired. All too often, human handling and inappropriate decision-making are responsible for failure of the product to perform as indicated.

Information for this factsheet was provided by:
The Beef Quality Assurance National Manual and the WI Beef Quality Assurance Certification Manual
"The Temperature Variability of Refrigerators Storing Animal Health Products", T.R.Troxel, PAS, B.L.Barham, PAS, University of Arkansas, Division of Animal Health, Cooperative Extension Service