

# The ABCs of Herd Health

BY NANCY GRATHWOHL



ANGIE STUMP DICKSON PHOTO

*The basis for a strong herd health program should be laid through genetics and nutrition before cattle enter the chute. A veterinarian-prescribed vaccination protocol can further safeguard health and productivity.*

Vaccinations are essential for a preventive herd health program; however, other management issues play a large role in ensuring that your health goals are realized. "The vaccinations are important, but they are minuscule compared to genetics and nutrition," says Gerald Stokka, Kansas State University Extension veterinarian.

Improve herd health genetically by selecting bulls who will sire females that are fertile and easy fleshing, that have good udder and teat conformation, that are sound on their feet and legs, and that have a good disposition and good mothering ability, says Stokka. "If the calf is born assisted at birth; or if he got up and couldn't find the udder because he had this great big, long, pendulous udder with big teats to deal with — anything that influenced that calf in and around birth — it has a tremendous impact on the risk of that calf developing a disease later on," says Stokka.

Nutrition impacts the quality of colostrum produced by the female. Cows with good body condition scores produce higher-quality colostrum; therefore, thin cows that produce lower-quality colostrum will have calves that are at a higher risk of developing disease, says Stokka.

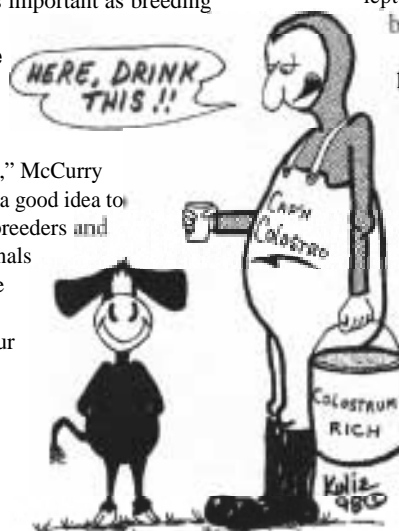
"If a calf doesn't absorb enough colostrum within the first 24 hours of age, then the calf is 3.2 to 9.5 times more likely to get sick, which is a huge risk factor," he adds. "Whatever you vaccinate them for, if they don't get that colostrum, if the mother doesn't lay down and have that calf all by herself, it doesn't mean anything."

After mastering the genetic and nutrition side of herd health, producers can further prevent disease through vaccinations.

"In years past, cow-calf producers have not considered their herds as being a valuable enough commodity," Stokka says, explaining producers often tend to take a bare-bones approach to managing their herds. "They need to realize that their herd is a very valuable commodity, and they need to protect it from outside influences."



Greg McCurry of McCurry Brothers, Sedgwick, Kan., agrees that their cow herd is worth protecting from disease. "We consider our herd health and vaccination program to be as important as breeding time and calving time and realize that our bottom line depends on a healthy cow herd," McCurry says. "I think it's a good idea to visit with other breeders and health professionals to help formulate what's best for your herd in your own area. When dealing with herd health, it's better safe than sorry."



To protect your herd, Stokka recommends the following three management tips:

1. Reduce exposure to infected animals;
2. Increase the level of resistance; and
3. Minimize exposure to infectious agents.

Reducing exposure to infected animals is achieved by testing purchased animals.

"You can't always prevent everything, but you minimize as much as you can by being careful about who comes onto your place and what comes onto your place," says Stokka.

Purchased animals should be tested for Johne's disease, bovine leukosis virus (BLV) and bovine viral diarrhea (BVD) before they are allowed to enter the herd, recommends Stokka. Check with your veterinarian on other diseases that merit testing for in your area.

#### ■ The second way to protect your herd is done primarily by vaccinations

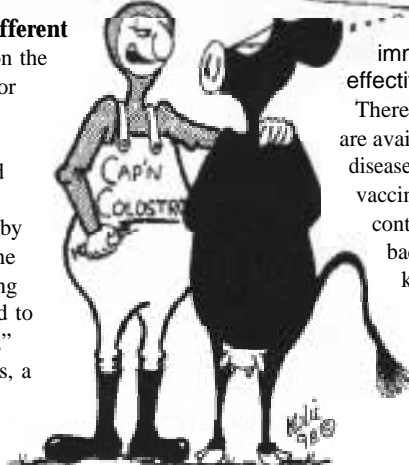
In a closed herd, in which no additions are brought in from outside the herd, young cattle should be vaccinated prior to breeding for vibriosis, leptospirosis, infectious bovine rhinotracheitis (IBR) and BVD. IBR and BVD should be given as a modified-live vaccine in two doses prior to breeding, recommends Stokka. He adds that IBR and BVD vaccinations can be skipped on an annual basis. Only the vibriosis and leptospirosis fraction would need to be boosted in a closed herd.

"However, in a more open-herd situation, where it is difficult to minimize or prevent exposure to IBR and BVD because you are bringing in cows from time to time, then you need to maintain all four antigens (IBR, BVD, lepto and vibrio) on an annual basis.

"My preference is to do all of those things in the spring prior to breeding with a modified-live IBR and BVD along with vibrio and lepto," says Stokka.

YOU NEED A SUB-Q PREVENTATIVE ANTI-INVASION VACCINATION

YER A PAIN IN THE NECK!



**With all the different types** of vaccines on the market, it is easy for consumers to get confused. We first need to understand how vaccines work. "All vaccines work by tricking the immune system into thinking it has been exposed to a particular disease," says Rod Christmas, a Kansas State University veterinarian.

More specifically, "Vaccines are biological products that are designed to stimulate the animals immune system to build protection against a specific disease," says Robert Smith, an Oklahoma State University veterinarian.

Smith warns that administration of a vaccine does not mean automatic protection. "The immune system must be

responsive," he says, emphasizing the need to keep stressors at a minimum so the immune system can respond effectively.

There are two types of vaccines that are available to treat or prevent disease. "A killed or inactivated vaccine is just that — killed. It contains no live viruses or bacteria. They have usually been killed with formalin and cannot replicate or cause disease when administered to the animal," explains Smith. Killed vaccines provide less protection and are slower to stimulate protection than modified-live

vaccines. "Killed vaccines work because the animal is injected with a large number of the disease-causing agents' particles," says Christmas. However, two doses of a killed vaccine are required for an animal to be immunized. On the other hand, "Modified-live virus

vaccines are live viruses that have been modified or altered in the laboratory so that they will not cause disease. They do replicate in the body for a short time; however, because of their mechanism of action they stimulate protection more quickly and provide broader and longer protection than most killed vaccines," Smith explains.

Some believe that modified-live virus vaccines are the better choice as they more closely resemble the natural infection, he explains. However, they are also unsafe for administration in pregnant cows or cows that are being nursed. Killed vaccines are safer, but more expensive, says Christmas. "Producers should consult with their veterinarians to decide which vaccines are best suited to their individual programs."

McCurry agrees that a close veterinarian tie is the key to a well-planned health program.

"We work very closely with our veterinarian, Dr. Mark Schwarm," says McCurry. "Each spring we sit down and discuss our needs and try to formulate the most cost-effective and progressive approach. By planning ahead, we can save on vaccine and dewormer costs by taking

CONTINUED ON NEXT PAGE

## A tough call

Vaccinations are imperative for herd health maintenance, but quality assurance is a management issue that producers must address at vaccination time.

"I stress the point that anything you put in the muscle, even if it is just saline, can be irritating to that muscle tissue and can cause a blemish or loss of quality," says Gerald Stokka, Kansas State University Extension veterinarian. "It is important to remember that before you stick a needle into an animal, you need to ask yourself, 'Will this needle actually do the animal some good, or is it something I absolutely need?'"

A study from Colorado State University looked at the tenderness of muscle tissue at injection sites. "Even up to three inches away from where the injection was given, the muscle was significantly tougher than the control muscle on the other side," says Stokka. "It is important for me to convince our producers that who they are and what they do is directly related to what the consumers see on the plate."

To ensure quality he urges producers to follow these four guidelines:

1. Think in terms that you're producing food for human consumption;
2. Remember cull cows are part of the food chain;



3. Use antibiotics wisely; and
4. Avoid injection-site blemishes.

Injection-site blemishes have been mainly caused by injecting into the muscle in either the top butt or round, says Stokka (see photo). "I really emphasize that those areas are totally, absolutely, 100 percent off limits. We are not going to put any injections into those areas in any age of animal, whether it be a young calf or old cow. All intramuscular injections, all sub-Q injections need to go in the neck region."

advantage of volume discounts and also determining if changes in vaccination protocol from the previous year are necessary."

**Minimizing exposure to infectious agents is the final way to practice preventive herd health maintenance.**

"Treat your farm or operation as a unit that you want to keep clean," says Stokka. Overwhelming rodent and bird populations should be prevented, and cattle trailers need to be clean to stop infectious disease from being brought onto your place, says Stokka.



*"For intramuscular injections, I use a 16-gauge, 1-inch needle and for subcutaneous injections, a 16-gauge, 3/4 inch needle to get the injection at the proper depth," says Rod Christmas, Kansas State University veterinarian. He recommends changing needles after every 10 head to ensure the needle stays sharp and to minimize injection-site problems.*

## 10 steps to proper injection techniques

### 1. RESTRAIN ANIMALS PROPERLY

This protects the animal from unnecessary stress and bruising, keeps the processing crew safe and improves the chances of administering the drug(s) properly.

### 2. SELECT THE BEST ROUTE

The product label will indicate which route or routes of administration are acceptable. Drugs may be labeled for the following uses: intramuscular (IM) — in the muscle; subcutaneous (Sub-Q) — under the skin and above the muscle tissue; intranasal (IN) — through the nostrils; intravenous (IV) — directly into a vein; topical — applied externally to the indicated body part or area; oral — by mouth; intramammary (IMM) — into the mammary tissue of the udder; intraruminal (IR) — directly into the rumen; or intrauterine (IU) — directly into the uterus.

In cattle production, IM and Sub-Q are probably the most commonly used routes. The differences in administration recommendations for vaccines are based on the action of the specific product. If the label gives the option of either IM or Sub-Q, always give the injection subcutaneously.

### 3. CHOOSE THE BEST SITE

Since injections can, and often do, cause site reactions, our goal should be to keep these in lower-value cuts of meat. Try to keep all injections ahead of the shoulder — never in the top butt or top of the rump.

### 4. USE PROPER INJECTION TECHNIQUE

Needle length and size and actual injection technique can affect both the efficacy of the treatment and the resulting site reactions. If the product is not placed in the location desired, if some of it leaks back out, or if too much of it is concentrated at one spot, the animal's response to the treatment will be affected, and the risk of residues or lesions increased.

✓ **GIVING SUBCUTANEOUS INJECTIONS:** Use a short needle 1/2 inch to 3/4 inch long, 16- or 18-gauge. Never use a 14-gauge needle in cattle. Insert the needle at a 30-45° angle, keeping it under the skin and above the muscle.

✓ **GIVING INTRAMUSCULAR INJECTIONS:** Use a needle that is long enough to penetrate well into the muscle — 1-1 1/2 inches long. Again, select 16- or 18-gauge needles. Inject straight in.

✓ **VOLUME PER SITE:** Don't put more than 10cc of a product into any one site. In the case of small calves, reduce that limit to 5cc. When giving multiple injections, keep the injection sites several inches apart. If a product must be given several times over a period of a few days, vary the injection site from day to day.

### 5. REMOVE ANY AIR FROM SYRINGE BEFORE GIVING INJECTIONS

Pump the syringe slightly before filling. Once the syringe is loaded, hold it with the needle upright and pump until all air is forced out.

### 6. MAINTAIN SANITATION

Sanitation practices include keeping the product, equipment and injection site free of contamination.

✓ **Don't go back into the product bottle with the same needle being used for injections.**

✓ **Change needles frequently** — at least every 10-15 uses, or per syringe-full. If a needle develops a bend or burr, discard immediately, since it will tear tissue.

✓ **When using killed vaccines or implants, keep a saucer or sponge of alcohol or disinfectant at hand to wipe off the needle after each use. Do not disinfect needles or syringes being used with modified-live virus (MLV) products; this could destroy the vaccine.**

✓ **Make sure the injection site is clean; dampness, mud and manure greatly increase the chance of infection.**

✓ **Between uses, clean your MLV syringe with hot water; clean others with disinfectant.**

### 7. TAKE PROPER CARE OF PRODUCTS

Improperly caring for health products can cause them to lose their effectiveness. Follow label directions regarding refrigeration, keep medicines out of direct sunlight, discard unused vaccines and when using large, multi-dose bottles, shake well before using.

### 8. MARK AND SEPARATE SYRINGES

To maintain effectiveness of products, use different syringes for MLV vaccines and for bacterins or killed products. It helps to mark them with tape or paint.

### 9. DON'T COMBINE PRODUCTS

Never combine vaccines — they may react with each other, and render both products ineffective. Use only approved combinations or separate injections.

### 10. MIX/RECONSTITUTE VACCINES PROPERLY

If a product needs to be reconstituted, use transfer needles to make the process easier and more sanitary. Place one end of the needle into the sterile liquid, or diluent. The other end goes in with the freeze-dried cake of vaccine or bacterin. There should be a vacuum to immediately pull the diluent down into the freeze-dried portion. If not, discard the vaccine. These vaccines begin to lose effectiveness in about one hour. Discard leftover vaccine.

*Source: "Kansas Beef Quality Assurance Programs for Cow-calf and Stocker Producers" handbook.*