Preventive Medicine Procedures for Cattle

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Abstract

Granting veterinary technicians major responsibility for cattle preventive medicine procedures in a rural veterinary clinic frees up time for the veterinarians in the practice for procedures that can only be performed by a veterinarian. This leads to professional growth for the veterinary technician as they become more proficient at preventive medicine procedures and even take on a client education role. Veterinary technicians have the skills to do most of the preventive medicine procedures used in processing calves, processing replacement heifers and in collection of samples for herd biosecurity programs.

Introduction

Over the past 10 years the shortage of veterinarians practicing in rural areas has become critical. It can take years after a position is initially advertised for a rural practitioner to hire an associate veterinarian. Various actions are being taken by the profession to solve this problem, but until it is solved, rural veterinarians will be stretched to their limits. Veterinary technicians have the training and desire to relieve the work load of practitioners by performing approved procedures under the supervision of a licensed veterinarian. This frees up time for the veterinarian to concentrate on services that only he or she can do.

Preventive medicine procedures for groups of cattle make up a substantial portion of practice for many rural veterinary clinics. To maintain accreditation of a veterinary technician training program, graduates must receive training in and be capable of performing the common tasks involved in cattle preventive medicine procedures. These skills could be used by a veterinary technician processing calves, in processing replacement heifers or collection of samples for a cattle operation's biosecurity program.

Processing Calves

Processing beef calves makes up a substantial portion of work in many rural veterinary practices. It is common to vaccinate, deworm, administer growth-promotant implants, castrate, dehorn and brand groups of calves in the same visit. Proper animal handling, vaccine handling, and administration of vaccines and anthelmintics are critical to successful processing of calves. Animal and vaccine handling have been addressed in the two previous presentations. Proper administration of products begins with reading the inserts for the different products and becoming expert with details of their use. This is a prime opportunity to become a teacher and educate the clinic's clients. Clients are happiest when they understand what is being done to their animals. It's important to warn producers of possible side-effects of certain products such as prominent granulomas following vaccination with oil-based *Campylobacter fetus* vaccines. Also, food safety considerations, especially withdrawal times before slaughter after use of products, must be discussed with clients. It is common for a 21 day period to be required between administration of vaccines and slaughter. Anthelmintics have withdrawal times before slaughter ranging from 0 to 35 days.

A primary goal of processing calves must be to administer products in a manner to avoid injection site blemishes. Always give injections subcutaneously if possible. Subcutaneous injections can be given when recommended in the product insert or if offered as a choice in the product insert. Use low-volume (2ml) doses when possible. Give all injections in the neck area and avoid the more expensive muscles of the hindquarters. Subcutaneous or intramuscular injections should be administered in a triangular area of the neck that has its base about three fingers in front of the scapula. Use one to 1½ inch needles for intramuscular injections and one-half to one inch needles for subcutaneous injections. Change needles often (every 15 animals is a good rule of thumb) to reduce tissue irritation and contamination. Never inject a needle through dirty skin!

It is common to administer growth-promotant implants to calves after they are castrated. They are placed under the skin on the back of the ear. Implants must be administered properly or their potential benefit will not be realized. Common causes of implants to fail include improper location (in the cartilage of the ear), infection and abscess formation, and crushing. To prevent abscesses, the implant needle must be disinfected between

animals. Animals must be securely restrained in order to properly place an implant. If the head gate is unable to hold the calf's head still, use a halter. Place the implant between the skin and cartilage in the middle-third of the ear. The implant site must be cleaned with disinfectant when the ear is covered with urine, manure or mud.

No job is done until the paper work is completed! Accurate records of processing can avoid problems and expense in the future. For example, re-implanting calves while the first implant is active causes vaginal prolapses in heifers and mammary gland development in steers. Good records sent with calves when transferring ownership can prevent re-implanting too soon. Processing records should include the following information on the animals: date, owner, number of calves, breed of calves, approximate weight of calves and sex of calves. In addition, records should include the following information on all products given: name, serial numbers and expiration dates, dosages given, locations of each injection and withdrawal times.

Processing Replacement Heifers

Well-managed beef replacement heifer programs give the heifers vaccine boosters and treatment with anthelmintics one month prior to the start of the breeding season. At this time, some producers request weights, body condition scores, pelvic area measurements and possibly reproductive tract scores. Veterinary technicians could play an important role in replacement heifer processing. Performancing of all of these procedures except reproductive tract scores would greatly reduce the amount of veterinary time needed to process a group of replacement heifers.

Biosecurity Programs

Traditionally, our success in control of livestock infectious diseases has been hampered by too much emphasis on use of vaccines, which usually are only partially effective. Vaccines are an important part of prevention of infectious disease, however, pre-purchase testing for carriers of specific infections and quarantine of purchased animals must accompany vaccinations for an infectious disease control program to be successful. Most cattle operations pay lots of money for the infectious agents active in their herds, because the pathogens enter the herds via new purchases that are chronically infected carrier animals. This can be prevented by testing potential herd additions for the carrier state before they enter the herd or during the quarantine period.

Each herd is a unique situation and different herds may decide to test for different diseases. In addition to traditional testing for brucellosis and bovine tuberculosis, pre-purchase testing for the following diseases must be seriously considered.

1) BVD virus persistently infected (PI) animals
- *Losses:* abortions, calf deaths, low conception rates.
- *Animals to test:* all ages birth to adult; both sexes.
- *Sample:* piece of ear skin collected with pig ear notcher.
- *Tests:* immunohistochemistry (IHC) skin test.
- *Accuracy of tests:* detects nearly 100% of PI animals.

2) Johne's disease
- *Losses:* diarrhea and emaciation.
- *Animals to test:* two years old to adult; both sexes.
- *Samples: f*eces, whole blood.
- *Tests:* combination of serum ELISA, and fecal culture or fecal polymerase chain reaction (PCR).
- *Accuracy of tests:* ELISA detects 50% of infected and 98% of non- infected cattle; fecal culture 100% accuracy; PCR in developmental stages.

3) Leptospirosis - (*Leptospira borgpetersenii* serovar hardjo-bovis*)*
- *Losses:* abortions, stillbirths, weak calves, calf deaths, mastitis.
- *Animals to test:* any herd addition.
- *Samples:* urine collected following furosemide injection, whole blood.
- *Tests:* urine florescent antibody combined with serum titers to five Leptospiras.
- *Accuracy of tests:* moderate.

4) Trichomoniasis
- *Losses:* abortions.
- *Animals to test:* **non-virgin bulls**.
- *Sample:* smegma collected from fornix of prepuce.
- *Tests:* smegma culture and/or smegma PCR .
- *Accuracy of tests:* one culture detects 67% of infected bulls; PCR has much higher accuracy.

5) **Neosporosis**
- *Losses:* abortions, possibly depressed weight gain in feed-lot.
- *Animals to test:* six months to adult; females only.
- *Sample:* whole blood
- *Test:* serum ELISA.
- *Accuracy of test:* detects 90% of infected animals.

6) Bovine Leukosis

- *Losses:* lymphosarcoma, failure to meet export requirements.
- *Animals to test:* six months to adult; both sexes.
- *Sample:* whole blood.
- *Test:* serum ELISA.
- *Accuracy of test:* detects 99% of infected animals.

Conclusions

Veterinary technicians have the skills necessary to carry out the bulk of activities involved with preventive medicine procedures for cattle. Their involvement in this aspect of practice will free up time for the veterinarian to perform services that only can be done by a veterinarian. The shortage of rural veterinarians is forcing increased utilization of veterinary technicians and may be leading to *"The golden age of veterinary technicians"*.