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Designing Treatment Protocols for Dairy Operations

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Introduction

Developing and implementing treatment protocols provides a means to monitoring some very key areas of today's dairy operation. The veterinary profession has always been valued for its expertise in the medical and surgical care of the dairy cow. The importance of the veterinarian is clearly evident in the definition of a Veterinarian – Client – Patient Relationship (VCPR) that the FDA uses to regulate prescription drug use in food producing animals:

1. The veterinarian has assumed the responsibility for making clinical judgements regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions.
2. The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept.
3. The veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reactions or failure of the treatment regime.

The existence of a valid VCPR is the cornerstone for assuring that food producing animals, such as the dairy cow, are able to receive the necessary medical attention while at the same time protecting the public safety, both from drug residues and zoonotic diseases. This is a responsibility that the veterinary profession takes very seriously and has worked very hard to carry out.

Today's dairy industry is striving to produce a safe and wholesome food product by utilizing modern business operation concepts, by designing facilities that maximize the potential of the dairy cow, and by utilizing new technology whenever possible. It is an exciting time to be a dairy veterinarian and have the opportunity to work closely with today's top producers. The veterinarian's role is evolving from primarily providing technical skills and services to becoming a management consultant. Developing and implementing treatment protocols with dairy producers is an important part of this evolution.

The purpose of Treatment Protocols

Treatment protocols are much more than simple "cookbook recipes" for treating cows. Ultimately, treatment protocols provide the means that management uses to direct the medical decisions that are made on the dairy. There are basically two types of medical decisions on a dairy: Individual cow decisions and herd policy decisions. Too often we only have focused on the individual cow decisions such as which cow to treat and with what product. The design of treatment protocols are herd policy decisions. A well designed and thought out herd policy on medical treatments will allow the best individual cows decisions to be carried out.

Monitoring in general is done with the purpose of looking for ways to improve a current situation. Monitoring treatment protocols will provide information on the herd policy decisions that management has made and will give the consulting veterinarian valuable information to determine if opportunities exist to improve the treatment options used by a particular dairy.

Because treatments are now standardized into protocols, we also now would have the opportunity to monitor the individual cow decisions and can look for opportunities to improve those decisions at the cow level. In addition, we would have information available to evaluate why a protocol seems to succeed on one dairy and appears to fail on another.

Having treatment protocols in place provides management with information that can be utilized for simple inventory and ordering purposes so that the necessary products are available when they are needed. The veterinarian's involvement is critical to help assure that only safe and effective products are used, and that they are stored and used properly. Decreasing the risk of drug residues can best be accomplished by following the DQA 10 point control program.

Monitoring the treatments will indirectly provide information on the occurrence of disease events that are associated with particular treatment decisions. Monitoring of clinical disease events is another important role that the production medicine veterinarian is closely involved in. This can open discussions with the dairyman on the cost of various disease conditions and the cost of therapy and can provide the opportunity to work on herd health programs aimed at preventing the disease from occurring.

Veterinarians also need to be involved in monitoring the outcome of treatment decisions that have been made. The companies that manufacture animal health products today put a tremendous amount of resources into developing safe and effective products. FDA approved products used according to label directions must be selected whenever possible because these treatments have the soundest base of scientific evidence for both efficacy and minimal residue risk. The Animal Medical Drug Use Clarification Act (AMDUCA) allows for extra-label drug use when there is no clinically effective product exists. The determination of "clinically ineffective" should be directly supervised by a veterinarian by regular review of treatment records. Extra-label drug use can only be legally done with the involvement of a licensed veterinarian in the context of a valid VCPR.

Treatment Protocols Defined

The process of developing treatment protocols is a series of steps made by management. The local veterinarian can provide valuable input into the entire process.

First, Herd Policy Decisions are made:

- Determine the specific events that will require medical decisions
- Determine the specific options that will be available for each event (Protocols)

Second, Individual Cow Decisions can then be made:

- Determine how the appropriate protocol will be chosen.

- After a protocol is chosen, determine how the protocol will be delivered to the cow and how the information will be recorded.

Third, The records can be used to monitor trends:

- Easy access to treatment history allows better cow-side decisions.
- Evaluate if the stated herd policies being followed.
- Evaluate if the herd policies can be improved.

It is critical that these steps be made in the proper order. If herd policy has not been clearly stated, then the individual cow decisions are impossible to control, monitor, or improve.

Step One: Herd Policy Decisions

There are specific events that happen to dairy cows that will trigger the need to make a medical decision. Predominately these medical decisions are associated with disease events. The main disease events that occur in dairy cows are well documented. ¹ When these events occur, a medical decision needs to be made and therefore a protocol should be in place. We can predict the most common events that will require a medical decision; this is the place to start when designing treatment protocols.

In addition to disease events, protocols can be associated with routine tasks that are carried out on the dairy. Many of these are related to disease prevention measures or routine health monitoring. Developing protocols provides a system for management to describe how various tasks should be done.

Areas that should be reviewed by management when creating Herd Policy:

1. Mastitis
2. Pneumonia
3. Milk Fever
4. Ketosis
5. Retained Placenta
6. Metritis
7. Cystic
8. Abortion
9. Displaced Abomasum
10. Diarrhea
11. Off Feed
12. Lameness
 - Infectious Cause
 - Injury
13. Reproductive Programs
 - Prostaglandin, GnRH
14. Parasite control programs
 - Internal

- External
15. Standard Management Procedures
 - Calving protocols
 - Fresh cow protocols
 - Baby calf protocols
 - Foot-Bath protocols
 - Vaccination protocols
 - Milking parlor protocols
 - Diagnostic protocols
 - Exams
 - Temperature monitoring
 - Urine pH
 - Urine ketones
 - Rumen pH
 - Stall Maintenance protocols
 16. Dry Cow Period
 - Dry Off Procedures
 - Pre-fresh/Close-up Procedures
 17. Miscellaneous: Events that happen “occasionally” (i.e. C-section, peritonitis) can be grouped together under “Miscellaneous” The herd policy for the “Miscellaneous” events should be to handle each on an individual case-by-case basis.
 18. Non-treatable disease protocol: There should be a stated herd policy on what to do with animals that are confirmed with a disease for which no treatment exists (i.e. Johne’s , BVD, leukosis, mycoplasma)

Within each event there should be a subdivision for the definitive diagnosis, especially when a specific pathogen is identified: For example, the mastitis event has well documented subdivisions (such as Strep. ag. mastitis, Staph. aureus mastitis, E. coli mastitis).

After management has defined the specific events that will trigger the use of a protocol, their veterinarian should be consulted to determine the specific options that will be available for each event. These options become the actual treatment protocols clearly defining the product, active ingredient, dose (amount and frequency), route of administration, duration of treatment, milk and meat withholding times.

Step Two: Making Individual Cow Decisions

After herd policies are designed, reviewed, and written down, the actual implementation requires teaching the protocols to the people actually treating the cow. Treatment protocols do not administer themselves. Every farm needs to develop the specific method and system to follow. By definition, a “protocol” means “a series of steps to be followed as a matter of policy”. Too often, little or no thought is given to the details of how treatment protocols will be accomplished. This is another area that a consulting veterinarian can be of tremendous value to the dairy management team. Some of the questions management should consider when designing a process to administer treatments to dairy cows are:

- Who will be making the cow-side, individual cow decisions?

- How will the sick cows be found?
- How will the suspect sick cows be examined and restrained?
- Where will the sick cows be examined?
- Will the exam area also be the treatment area?
- How will the treatments be administered?
- Should this cow be treated or is she a cull candidate?
- Who will administer the treatments?
- How will the housing needs of the sick cows be met?
- Where will the drugs be stored?
- What ancillary treatment equipment is needed?
- How will the treated cows be identified?
- How will the milk or meat be tested for residues after treatment?
- How will the treatments be entered into the record system?

Step Three: Using Records and Monitoring

Having a record system in place that allows routine, easy access to information is the third and very important part of a treatment protocol system. Every time a person is required to make a decision on the dairy, whether it be an individual cow decision or a herd policy decision, having a source of information available can help them to reach that decision quicker, or easier, or better, than if no information is available.

When individual cow records are readily available, reviewing them prior to any treatment being given to the cow can lead to tremendous improvements in what decisions are made. A review of an individual cow's history is an important part of a complete physical exam. Information such as the current milk production level of the cow, her current reproductive status, and the number of times she has been treated previously are key to help determine if perhaps culling is a better option than treatment. Too often, culling is eliminated as being an option (at least until the proper meat withholding has been followed) because antibiotics were administered.

The type of record system that is used, what information (data) is to be captured, how the data is entered, and how the records will be accessed are all very important herd policy decisions. Again, if management expects the employees to make good decisions, the employees must be given the tools that allow them to make the right choice. For individual cow medical decisions, the one of the tools they need is an easily accessible record system.

While having a well designed record system in place allows not only better individual cow decisions, it also is the means by which management can monitor what decisions the employees have been making and if they are correctly following herd policies.

Finally, drug use records are one of the critical control points in the prevention of drug residues into the food chain. Regular review of these records provide a means for veterinarians to be actively involved in the medical treatment decisions that are made by the on-farm personnel. If it becomes necessary to prescribe a drug to be used in an extra-label manner, the record requirements are a key part of the Animal Medicinal Drug Use Clarification Act (AMDUCA).

The emphasis that AMDUCA places on the Veterinarian-Client-Patient relationship clearly shows the level of responsibility that the United States Congress has entrusted to the practicing veterinarian to assure that food producing animals, including the dairy cow, are able to receive the necessary medical attention while at the same time protecting the public safety.

Reference:

1. Kelton, D.F., Lissemore, K.D., Martin, R.E. 1998. Recommendations for Recording and Calculating the Incidence of Selected Clinical Diseases of Dairy Cattle. *J. Dairy Sci.* 86: 2502-2509.