

Practical Monitoring of Clinical Mastitis Treatment Programs

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How many cows with clinical mastitis in your herd need to be re-treated? How many clinical mastitis episodes are caused by coliforms (Gram negative bacteria)? How many cows have multiple mastitis episodes in the same quarter? On average how many days do they spend in sick pen? How many mastitis episodes result in a dried-off quarter? If you don't know the answers to these questions, you don't really know if your mastitis treatment program is effective.

In the dairy industry today it has become increasingly important that we “ask the cows” how our management is doing by monitoring herd health and production data. Mastitis treatment efficacy is a classic example. In many instances whatever was in the last intramammary tube that was infused gets credit for the “cure”. Perhaps you have a treatment protocol in place, but are relying on the herds person's or sickpen crew member's perception of “how well” a particular treatment is working. This information can be misleading. Often the more recent, more severe, “treatment failures” remain prominent in their mind and they have no clear picture of treatment efficacy. Developing rational treatment protocols, adhering to them and setting up a method for accurate and complete on farm data capture and recording eliminates these biases. Having these elements in place greatly increases your ability to more objectively monitor the success of clinical mastitis treatment programs and make informed, economically sound decisions.

The need for treatment of clinical mastitis is to some degree an indication of failure of our Udder Health Management Program (UHMP) to minimize exposure to mastitis pathogens and optimize resistance of the cows. A complete UHMP should include: routine bulk tank milk culturing and bulk tank SCC monitoring, routine mastitis pathogen profiling or individual clinical mastitis milk culturing, maintaining cow and bedding cleanliness, excellent milking parlor procedures and complete data recording. Such a plan allows for development of rational, standardized treatment protocols to deal with clinical mastitis when it does occur and monitor the success of the program. Examples used are from Dairy COMP 305™ (Valley Agricultural Software, Tulare, CA), however, the concepts apply broadly.

Data Capture and Recording

Many times clinical mastitis records contain insufficient data or the data is there but requires hours of tedious manipulation and clean-up to evaluate treatment efficacy. The first and most important step in practical monitoring of your clinical mastitis treatment program is to determine what data need to be collected. Data collection is guided by the questions you want to ask, examples of which are listed in Table One.

Table One: Questions for which the data set should provide answers.

1. What is the monthly incidence of clinical mastitis?
2. What is the cause of clinical mastitis?
3. What intramammary (IMM) antibiotics are used to treat clinical mastitis?
4. How many clinical mastitis episodes require re-treatment?
5. How many cows have more than one mastitis episode in the current lactation?
6. How many cows have recurrent clinical mastitis episodes (multiple clinical mastitis episodes in the same quarter > 14 days apart)?
7. How long are cows with clinical mastitis in sick pen?
8. How many cows have a quarter dried, die or are culled due to clinical mastitis?

To answer these questions it is very important to develop a data capture method that is easy and convenient for the sick pen crew or herds person to use. Sick cow treatment cards allow for easy recording of daily treatment details such as dosage, route and duration. Subsequently, data pertinent to the monitoring program can be transferred to the herd management software or written herd summary worksheet.

Data entry protocols should ensure that data is recorded accurately, consistently and reliably. Consider the following suggestions regarding data collection protocols.

As a general rule anything that happens to all animals at set times does not need to be recorded in herd management software. Examples include routine vaccinations and giving magnets. Furthermore, unless you are interested in monitoring outcomes of such treatments, supportive care (fluids, anti-inflammatories, etc) need not be recorded in events remarks. They should be available on individual cow treatment cards if needed.

Clinical mastitis health event remarks should include: Quarter(s), antibiotic treatment and culture result. Those using DC305 know that the remark is limited to only 8 characters. This is done intentionally so events can be more easily sorted by remark. The duration and frequency of antibiotic treatment need not be entered in the remark if a defined protocol is being followed. Example: MAST LF AM GN allows for easy sorting of cows with clinical mastitis by treatment (AM=amoxicillin) and or culture result (GN=Gram negative).

Avoid redundancy of health event data. A cow should only have ONE MAST event per clinical mastitis episode. Many producers using herd management software enter multiple health events for a single clinical episode. For example a cow is identified with clinical mastitis and a MAST event is entered in her record. She fails to cure following initial treatment, a new treatment is started and she receives another MAST event. Thus one cow with a single clinical mastitis episode would have 2 MAST events recorded resulting in inaccurate monthly tallies and health event lists provided by the software. If treatment is changed or the cow flares up in the same quarter within 14 days the cow

should receive a different event that can easily be tallied as an indication of treatment failure (ex. A separate REMAST event with a remark that includes quarter and treatment and culture result). Another problem arises if a cow receives a MAST event for every day she is treated in sick pen. This information should be available on the sick cow treatment cards.

To ensure that data collection can be evaluated in order to answer your questions, be sure to include the following information in your data set.

1. *Hospital pen days.* This parameter is often the best way to evaluate days to clinical cure which is not typically recorded on farm. It is important to realize this parameter includes antibiotic withdrawal time and is typically an overestimation of days to clinical cure. This can be calculated manually from pen MOVE events on either side of a MAST event or using a separate hospital pen (HOSP) event.

2. *Cow with a dry quarter.* For all cows in which it is elected to kill a quarter an event (3TEAT) should be recorded with a remark indicating the quarter that was killed (LR), the method (NL-Nolvasan, BD-Betadine, AMP-Amputate) and the culture result. Recording this event will allow easy tallying of cows requiring quarter killing monthly and annually. If it is elected to kill a quarter when a cow presents for a new mastitis episode (usually due to repeated episodes) a MAST event should be recorded with a remark indicating quarter, method and culture result (Ex. MAST RH NL GN). If it is elected to kill a quarter after initial treatment has failed a REMAST event should be recorded the same way (Ex. REMAST RH NL GN). In both these situations a 3TEAT event should be recorded as well.

3. *Death and culling due to mastitis.* When death (DIED) and culling (SOLD) events are recorded it is important to include the reason in the remark in such a way that they can easily be sorted. Include the event code in the SOLD or DIED remark (Ex. SOLD 38 NCOB, where 38 is the event code for mastitis and NCOB is Northern Colorado Beef).

4. *Individual cow somatic cell count (SCC)* if available. Many larger herds have limited (quarterly) or no individual cow SCC data. Evaluating SCC before and after a clinical mastitis episode can be used to evaluate resolution of intramammary infection.

Data Evaluation

Once excellent data capture and recording has been established, it is possible to evaluate the data in order to monitor the effectiveness of clinical mastitis treatment programs. Data are typically evaluated monthly and the results recorded to allow for longitudinal evaluation (changes with time). Many herd management software programs will provide monthly and annual tallies of some of the parameters of interest. Efficiency of reporting is greatly enhanced by having many parameters calculated automatically; however, it is often necessary to download lists of data to a file that can be opened into a spreadsheet. This allows for compilation of data, sorting and calculations.

Establishing a herd baseline for the parameters to be monitored is critical to the evaluation of the impact of clinical mastitis treatment protocols. Furthermore, realistic goals should be established based on the economic constraints of obtaining those goals. If you or your veterinarian would like more information or help establishing practical clinical mastitis treatment monitoring email Dr. John Wenz at jrwenz@colostate.edu.