

Making Effective Use of Antimicrobial Therapy for Mastitis

Dr. Charlotte Winder

July 2016

While this article focuses on the treatment of mastitis, identifying preventative measures are essential to a successful udder health program. Appropriate environmental management, milking equipment and practices, as well as vaccination programs, all help to decrease infection pressure and reduce the risk of mastitis. Therapy is an important pillar, but should not be the only part of your udder health program.

At a recent talk on antimicrobial use (AMU) and antimicrobial resistance (AMR) given by Dr. David Barrett of Bristol University, he used a quote from Edmund Burke, “*Nobody made a greater mistake than he who did nothing because he could only do a little*”, to illustrate the point that all involved in antimicrobial use are collectively responsible for ensuring we use these valuable tools effectively and responsibly. While antimicrobial use in humans, pets, and other agricultural animal sectors are also important to consider when examining AMU/AMR as a whole, we are each responsible for ensuring our own industry’s practices are appropriate and effective.

By far, the majority of antimicrobial use in the Canadian dairy industry is for the treatment and prevention of mastitis. Antimicrobial therapy is an important part of udder health; without it cows with severe infections would suffer, and other cases may be more likely to spread to other cows, to become chronic, further reduce productivity, or increase her risk of being culled. However, inappropriate or unnecessary use wastes time and money, and may increase risk of AMR development. Ensuring appropriate use can have a significant impact on both total use as well as efficacy of therapy. Optimizing your diagnostic and treatment protocols for mastitis can help save you time, money, and can reduce the risk of AMR. In essence, appropriate use is all about giving the right treatment at the right time to the right cow.

Treatment is often more effective when given early in the course of disease. This means we need a reliable, repeatable way to identify cows who may need treatment. For **clinical mastitis**, forestripping (at least three streams per quarter) during milking prep is the best to identify cases early in their course. Although forestripping onto the parlor floor works very well, in tie-stalls it is recommended to use a strip-cup in order to both provide a dark background to evaluate the milk, as well as to keep the bedding clean and dry. For **subclinical mastitis**, identification is reliant on use of somatic cell count (SCC) data from DHI, or by use of a California mastitis test (CMT). Subclinical infections can become chronic, and identifying a cow for potential treatment before she has had a long string of high tests can increase her chance of cure. Chronically infected cows should be identified so that further treatment is not wasted on them, and either culled or segregated to the end of the milking order so they are at less risk of infecting others.

Clinical signs and elevated SCC are a result of inflammation, and although they can indicate an active bacterial infection, this is not always the case. Some cows may have already

cleared the infection by themselves, or may have an infection with non-bacterial organisms such as yeast or *Prototheca*. In some cases, culture-based treatment decisions can be made, provided samples are collected aseptically and there is access to a lab with quick turnaround time (this may be on-farm, at your veterinary clinic, or at a diagnostic lab). Information on which, if any, bacterial species are present help determine if the cow is a candidate for treatment, and also which type and duration of treatment should be administered. Some bacterial infections may not require treatment at all. It is important to note that **severe mastitis** (cows with signs of systemic illness such as fever, dehydration, or dullness/depression; sometimes called acute, toxic, or watery mastitis) require immediate treatment and should not wait for culture results in order to begin therapy.

Besides use of culturing for individual treatment decisions, even if samples are collected and treatment started immediately, the culture results can inform herd-level decisions and protocol development. Decisions on how and when to use information gained from bacterial culture are farm specific; a discussion with your herd veterinarian can help determine which strategy may be appropriate for your farm's udder health program.

Overall, it is worthwhile to take time to evaluate your udder health program's treatment protocols. Ensuring treatment decisions are appropriate will help maximize chance of cure, reduce unnecessary costs and risks, and improve our stewardship of these important tools for animal health and welfare.

Udder health resources

Canadian Bovine Mastitis and Milk Quality Research Network
<http://www.medvet.umontreal.ca/rcrmb/>

Dutch Udder Health Center
<http://gddiergezondheid.nl/uiergezondheid>

University of Wisconsin Milk Quality
<http://milkquality.wisc.edu>