

Are You Adding Fuel to Your Mastitis Fire?

Improper Treatment Technique Can Make Things Worse- A Case Study

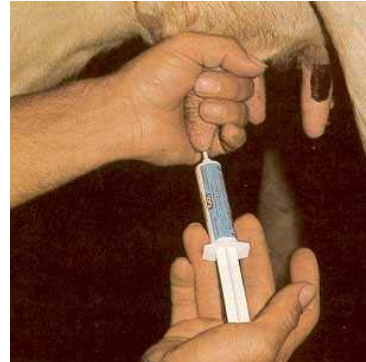
By Mike Zurakowski

A cow shows signs of clinical mastitis. Flakes, clots, and discolored milk are observed during milking. You reach for an antibiotic intramammary treatment. The teats look clean following milking so you put the tip of the syringe into the teat end opening and infuse the antibiotic. Things should be better in the next day or so.

However, they do not get better. In fact, her mastitis gets worse with fever, dramatic drop in milk production, and she stops eating. She is really sick.

Was this a result of the original mastitis pathogen or was it something that you introduced during the treatment process?

During the summer of 2008, a well-managed farm in upstate New York initiated extended antibiotic therapy on nine cows with subclinical *Staph aureus* mastitis. These animals were identified during a routine herd survey and they met the requirements for extended antibiotic therapy to eliminate *Staph aureus*. Often, five or more days of extended therapy is recommended for young, first or second lactation animals, with a low somatic cell count, that are infected with penicillin susceptible strains of *Staph aureus*. If these infections are detected early enough and antibiotic therapy is initiated there is a good chance that these infections will be cured and the animal may lead a healthy, productive life.



Improper treatment technique such as not wearing gloves, not cleaning teat ends and full insertion into the teat orifice can contribute to mastitis.

All quarters of these nine lactating cows were treated with a single dose syringe of a Pirlimycin-based intramammary antibiotic. After the third day of an anticipated eight-day treatment regimen, eight of the nine cows presented with severe clinical coliform mastitis one of which died due to septic shock. Milk cultures were performed on all treated quarters and twenty of the thirty-six treated quarters were infected with either *E.coli*, *Klebsiella pneumoniae*, or both of these organisms. Cultures of unused antibiotic syringes were all negative indicating that the product involved was not responsible for the resulting mastitis outbreak. Investigation using molecular strain typing techniques identified improper handling of treatment syringes and/or poor preparation of the teats as possible sources of the coliform mastitis outbreak.

Antibiotic Use Recommendations

Studies performed the University of South Carolina, Arnold School of Public Health show that farm use of antibiotics is most often based on observed symptom assessment with few farmers following formal written antibiotic use protocols. In addition, most

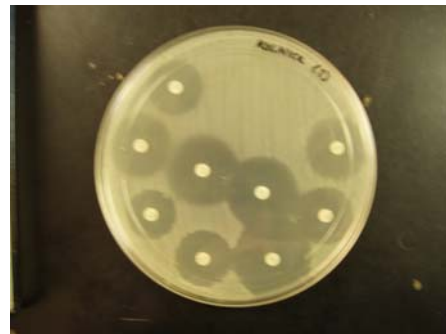
farmers are not concerned with the over use of antibiotics in animals. The most common reasons for improper use of antibiotics included limited finances, lack of time.

Clarifying when and how antibiotics should be used on your farm should not be an expensive or time-consuming process. Your veterinarian and udder health specialist can work with you to create antibiotic use protocols. A proper protocol should include the following recommendations:

Use antibiotics appropriately. Antibiotics should be used appropriately and responsibly according to manufacturer and veterinarian recommendations. Combining various lactating and dry period antibiotic products, mixing types of antibiotics, doubling antibiotic doses and other off-label use of antibiotics is prohibited and may be detrimental to the health of the animal as well as increases the risk of antibiotic residues. In cases of mastitis, milk cultures should be performed prior to treatment to determine if treatment is warranted. Culture-based treatment prevents unnecessary use of antibiotics reducing the chance of antibiotic residues and associated expenses while maximizing the potential for curing some infections.

Use approved antibiotics treatments. Treatments should be aseptically prepared in single dose syringes. Avoid use of “antibiotic cocktails” or “home-made remedies” with multiple infusions taken from the same bottle or syringe. These common sources of antibiotics can become contaminated with non-susceptible organisms and are easily spread through the herd during treatment.

Avoid long-term use of antibiotics. If a mastitis case does not respond to the antibiotic therapy you are using, the organism involved may be resistant. Consider culturing for the specific organism and having an antibiotic susceptibility test performed. Susceptibility tests subject bacteria to the various antibiotics available to help guide you to use the most effective treatment. Disks, preloaded with various antibiotics, are placed on a culture of the mastitis causing bacteria. The antibiotics diffuse into the agar and inhibit the growth of susceptible bacteria. Organisms that are resistant to the antibiotic will grow right up to the disk while susceptible bacteria will have a zone of no growth.



Antibiotic susceptibility test. Bacteria are subjected to disks with various antibiotics.

Use proper treatment techniques. Proper technique is extremely important when anything is introduced into the mammary gland. Teat ends that are not properly cleaned, dried, and thoroughly disinfected using alcohol swabs prior to infusion may harbor organisms that may easily be forced through the streak canal into the udder during treatment. These newly introduced pathogens may complicate clinical and subclinical mastitis contributing to the animal’s illness.

Appropriate use of antibiotics should assist animals in overcoming the effects of mastitis. By creating and following an antibiotic use protocol, you can avoid contributing to the mastitis problems in your herd.

The National Mastitis Council endorses the following recommendations when managing clinical mastitis during lactation.

National Mastitis Council Recommendations of Appropriate Management of Clinical Mastitis during Lactation

- **Develop and implement a herd clinical mastitis treatment protocol with the Herd Udder Health Advisory team.**
- **Carefully consider the economic ramifications of therapy decisions.**
- **Collect a pre-treatment milk sample aseptically for microbiological culture so that antimicrobial susceptibility tests can be used when appropriate.**
- **Use an appropriate therapeutic regimen; use drugs according to the protocol, or as recommended by the health advisors.**
- **Prior to infusion, disinfect the teat with a germicide and scrub the teat-end with an alcohol swab.**
- **For infusion of intramammary antibiotics, use a single dose, regulatory approved product by the partial insertion method.**
- **Do not treat chronic non-responsive infections.**
- **Observe the correct withdrawal period for the antibiotic used, as stated on the label. If extra-label drug use is necessary, follow regulatory guidelines under the supervision of a veterinarian.**
- **Always follow recommended drug storage guidelines and observe expiration dates.**
- **Clearly identify all treated cows, and record all treatments in a permanent record.**