

What is “Extended Therapy” for Mastitis?

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Every case of mastitis is costly to the dairy producer in terms of decreased milk production, treatment expense, lower milk quality premiums, and possible culling or death of the affected animal. Indirectly, it takes extra time during milking to properly identify a treated cow and discard her milk and there is always the risk of a “hot load” if a treated cow is accidentally milked into the tank. The last thing a producer wants or needs is to re-treat a cow that relapses with a recurring infection. These “subclinical” infections result when a producer discontinues antibiotic treatment because the milk looks normal but the hard-to-kill mastitis organisms are still alive in the gland and waiting for their opportunity to attack again. The option of “extended therapy” is available to increase the chance of complete bacteriological cure of mastitis in which all of the bacteria causing the infection are killed.

It is crucial to work with your veterinarian to first determine what organism is causing mastitis in order to choose the most appropriate drug and duration of antibiotic therapy. An “extended therapy protocol” or “extended duration of therapy” is defined as administering intramammary treatment (mastitis tubes used in the quarter) for 2 to 8 days consecutively. Only two products on the market (Spectramast® and Pirsue®) are labeled for and demonstrated effective with extended therapy. Both products are prescription only so a valid veterinary/client/patient relationship must exist to obtain these medications. However, extended therapy is not “extra-label” - in other words, a producer can follow the label directions on the box instead of the veterinarian needing to write special or alternate directions for use.

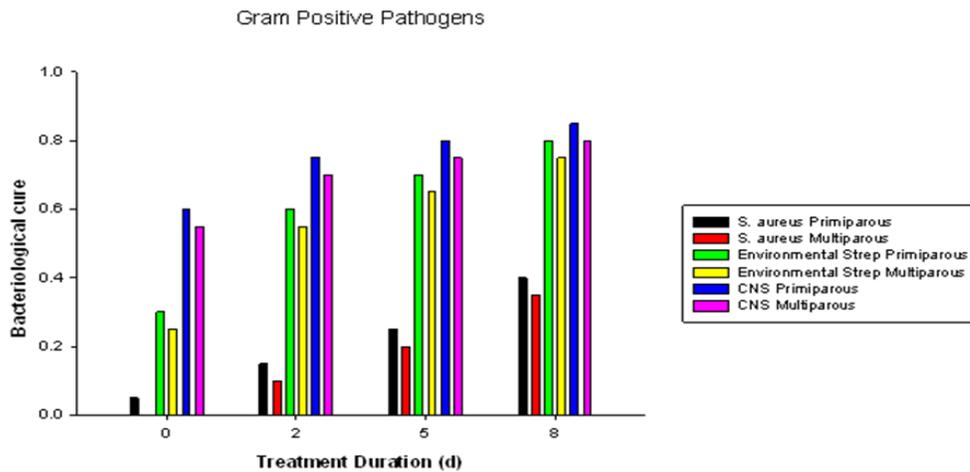
Spectramast®LC (ceftiofur hydrochloride) is labeled for treatment of clinical mastitis due to three environmental organisms: 1) coagulase-negative staphylococci, 2) *Streptococcus dysgalactiae* and 3) *Escherichia coli*. Instructions are to administer one syringe into each affected quarter and repeat this treatment in 24 hours. “For extended duration therapy,” the label reads “once daily treatment may be repeated for up to 8 consecutive days.” Surprisingly, residue warnings for Spectramast® are the same for regular or extended therapy. Milk taken from cows during treatment (up to a maximum of 8 daily infusions) and for 72 hours after the last treatment must be thrown away. A two day pre-slaughter (meat) withdrawal period is required following label use for up to 8 consecutive days.

Pirsue® (pirlimycin hydrochloride) is labeled for clinical and subclinical mastitis associated with *Staphylococcus* and *Streptococcus* species including the contagious organisms *Staphylococcus aureus* and *Streptococcus agalactiae*, and the environmental organisms *Streptococcus dysgalactiae* and *Streptococcus uberis*. The directions are to infuse one syringe into each affected quarter and repeat the treatment after 24 hours. Daily treatment may be repeated at 24-hour intervals for up to 8 consecutive days. For extended duration of therapy, it is important to treat only the quarters known to be infected and not the uninfected low SCC quarters of the same cow. Pirsue’s product insert specifically warns that repeated infusion during extended duration therapy can result in elevated somatic cell counts and/or clinical mastitis that is most often due to infection with Gram (-) environmental organisms, even with adequate teat end preparation and sanitation. If acute clinical mastitis or other clinical signs of illness develop during extended duration therapy with Pirsue®, it is important to discontinue therapy immediately and contact your veterinarian. Residue warnings for milk taken from animals during treatment and for 36 hours after the last treatment must not be used for food. Pre-slaughter withdrawal is 9 days if infused only twice at a 24-hour interval but is 21 days if extended therapy is used.

Extended duration intramammary therapy has been shown to increase bacterial cures for mastitis caused by Gram (+) organisms. In a recently published study by Pinzon-Sanchez et. al (2011), estimated probabilities of bacteriological cure by pathogen and duration of treatment were compiled as seen in the graph below. First lactation (primiparous) cows had a higher rate of cure than cows in their 2nd lactation or later (multiparous). The contagious organism *Staph. aureus* had a relatively low overall cure rate as

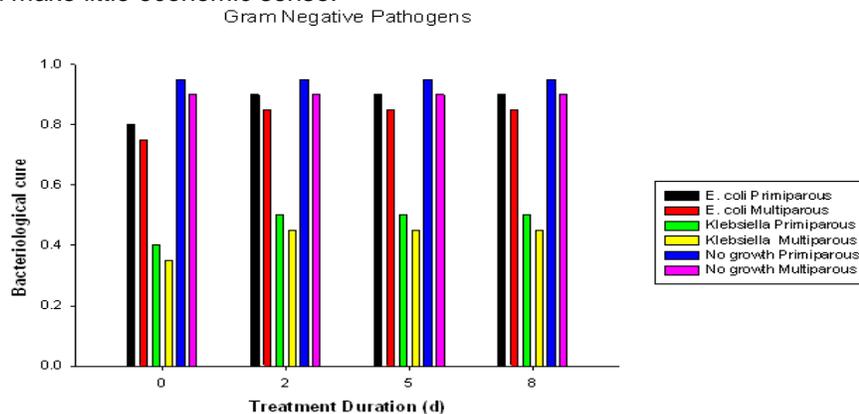
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compared to the environmental organism coagulase negative Staph. (CNS) and the environmental Streps (*Strep. dysgalactiae* and *Strep. uberis*).



Graphs generated by Jackie L. Smith, M.S. (UKVDL Epidemiology Section Chief)

Extended therapy is of relatively little value if the causative organism is Gram (-) or if the milk culture result is “no growth”. Cure rates are very similar despite the length of treatment so extended therapy would make little economic sense.



In summary, the benefits of extended therapy include:

1. Higher proportion of bacteriological cure caused by Gram (+) organisms (*Staphylococcus* and *Streptococcus* species)
2. Reduced chance of relapse and treatment failure
3. Decreased SCC
4. Less risk of spread of contagious organisms, especially *Staph. aureus*
5. Improved marketability of milk

The drawbacks of extended therapy include:

1. Price of the medication (antibiotic tubes)
2. Loss of milk due to long treatment duration
3. Risk of residues in milk and meat
4. Potential to cause more mastitis; especially with extended use of Pirsue®

Working with your veterinarian to determine what type of mastitis you are dealing with combined with the knowledge of the individual cow age, lactation status, treatment history, SCC, length of infection and overall health status will ultimately lead to the best treatment decisions on your farm.

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