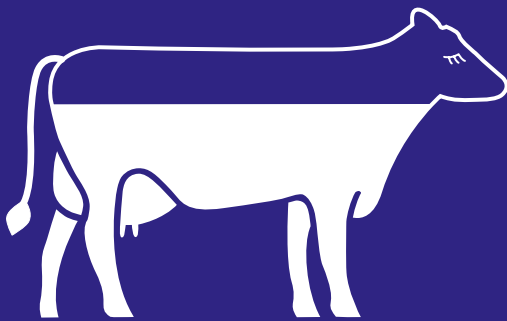




MASTITIS THERAPY





Mastitis: a guessing game with deadly consequences

Mastitis is a major problem confronting dairy producers. Often, treatment decisions must be made without the luxury of identifying the specific pathogens infecting the animal. Getting mastitis treatment right and right from the start will play a critical role in ensuring cure rates, milk productivity and even survival. But how can it be more than a guessing game?



The first 100 days are critical

Mastitis can take many forms representing a range of pathogens. It isn't always easy or convenient to determine exactly which pathogens are behind a case of mastitis. What is clear is that mastitis requires fast and effective action if the cow is to return to the production of good quality milk. Cows are particularly vulnerable in the first 100 days of lactation. High production, negative energy balance and low immunity are frequent factors precipitating the infection.

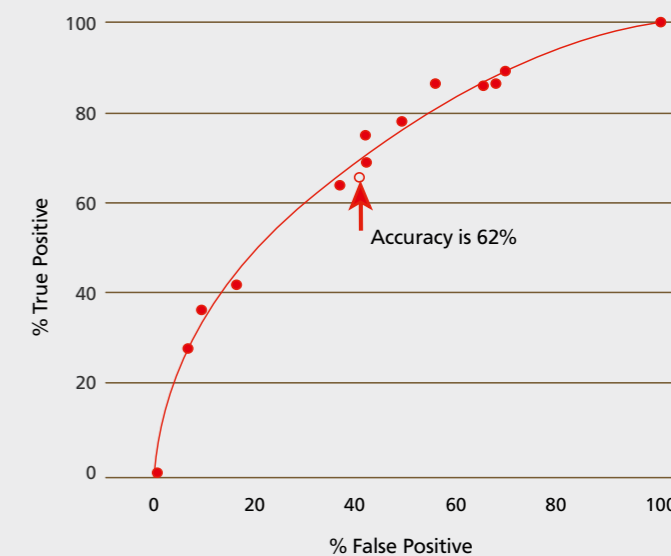
Mild or severe... It's not written on the ear tag...

Unfortunately! There is a great deal of variability when it comes to how individual animals react to mastitis pathogens. Some cows are able to overcome the onset of the disease with their own defenses while others see a rapid evolution from mild to severe in an extremely short time frame.

Research shows that guessing is not a good option

It is notoriously difficult to predict the specific pathogens involved in mastitis. White et al., 1986, determined that the accuracy rate of clinical diagnosis of *E. coli* mastitis was only 62%. That means that in nearly 40% of cases, clinical mastitis was misdiagnosed.

Accuracy of clinical diagnosis, *E. coli* mastitis³



Incidence of mastitis pathogens % of sample^{1, 2}

<i>Streptococcus dysgalactiae</i>	4 - 13%
<i>Streptococcus uberis</i>	6 - 7%
<i>Staphylococcus aureus</i>	10 - 19%
<i>Escherichia coli</i>	8 - 20%
Negative	15 - 44%





100% of severe mastitis cases begin as mild mastitis

The fact is, you can't know which case will develop into severe mastitis. With severe coliform mastitis comes a high risk of blood poisoning (bacteraemia). Blood poisoning is caused by the presence of bacteria in the blood and may also be accompanied by toxins leading to severe illness and death. The risk of blood poisoning is one of the principle reasons why additional, broad spectrum parenteral treatment is recommended.



A need for early, broad-spectrum treatment.

Cefquinome's exceptionally broad spectrum of activity covers both the gram positive and gram negative organisms involved in mastitis. The MIC of cefquinome against the main mastitis germs throughout Europe are regularly monitored. The intensive screening scheme gives the following results:⁵

42% of cows with severe mastitis have blood poisoning!



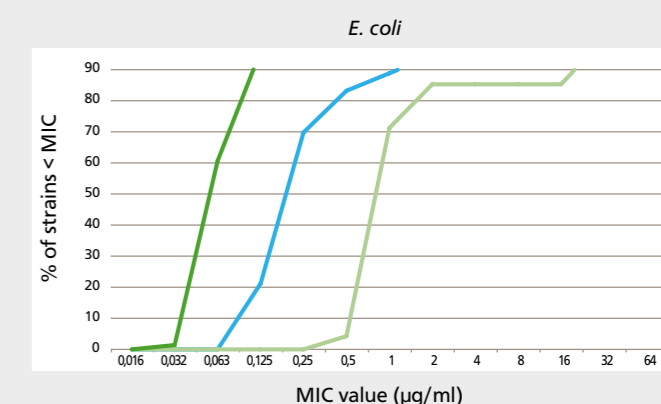
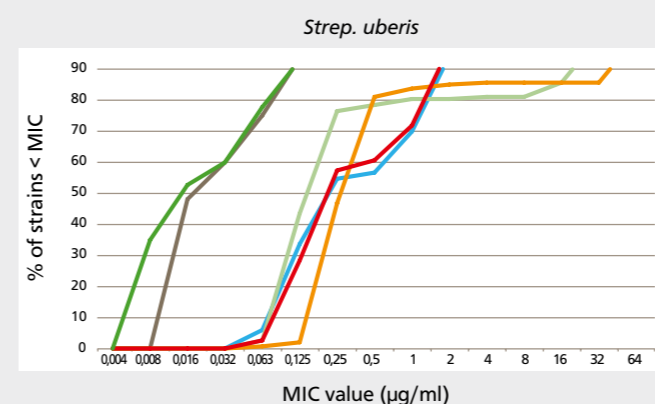
If there is *E. coli* in the milk, then there is a high probability that the same bacterium will be found in the blood.

Bacteraemia in coliform mastitis⁴

144 cows, *E. coli* (n=122) or *Klebsiella* (n=19) or both isolated (n=3) in milk

	number of cows	number of positive milk samples	number of positive blood samples	% of positive blood samples
Healthy	156	0	0	0
Coliform mastitis	144	144	20 ^a	14 ^a
Mild	69	69	3	4,3
Moderate	44	44	4	9,1
Severe	31	31	13	42

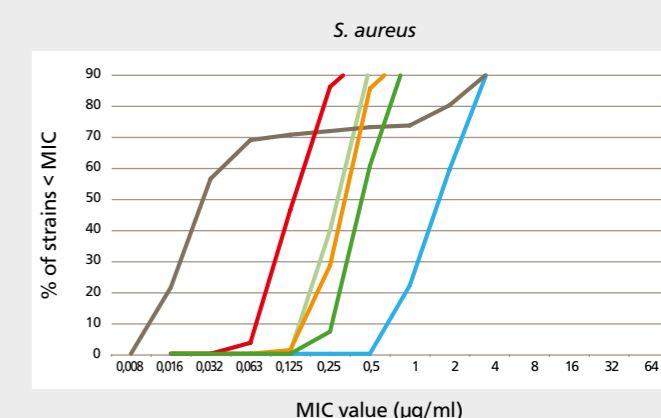
^a significantly different from healthy cows, p< 0.001



% of *Strep. uberis* strains (n=152), % of *S. aureus* strains (n=168) and % of *E. coli* strains (n=142) < Minimum Inhibitory Concentration (MIC).

The bacterial strains were isolated from clinical mastitis cases in different European countries between 2000-2005.⁵

- cefquinome
- oxytetracyclin
- penicillin
- tylosin
- cloxacillin
- cefoperazone



Isolates of *E. coli* are resistant to penicillin, tylosin and cloxacillin.



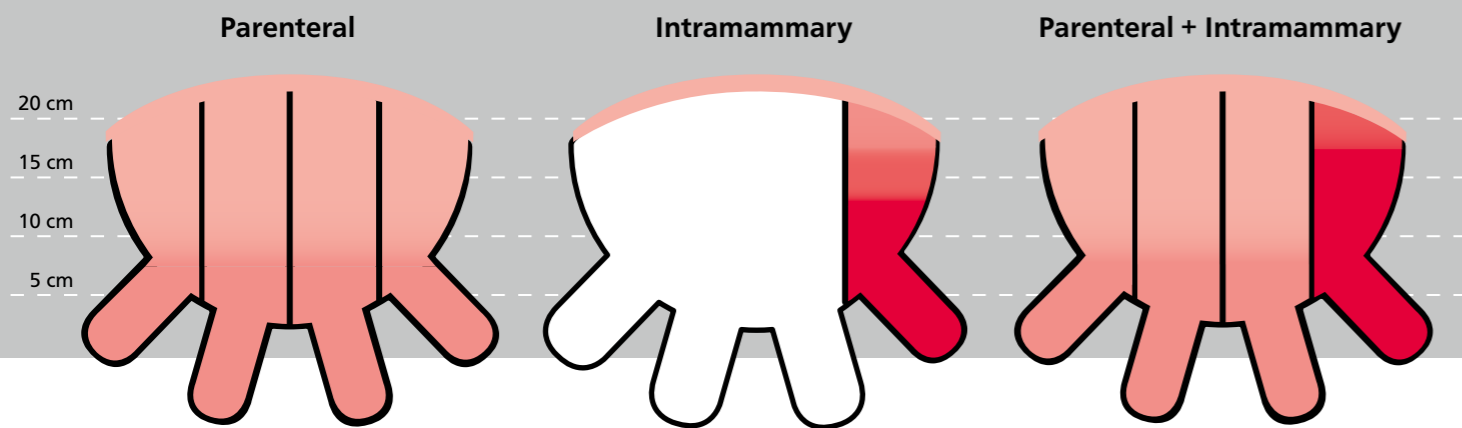
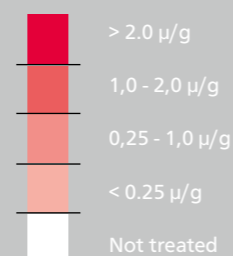
The injection is tailored to the tube

Not all antibiotic combinations are effective due to their specific pharmacokinetics or pharmacodynamics. For example, quinolones become inhibited by milk components while macrolides, whose activity is bacteriostatic, are counteractive when combined with bactericidal antibiotics. Combination therapy ensures peace of mind thanks to the same active ingredient (cefquinome) in the intramammary and parenteral application.



Better distribution and higher concentrations in udder tissue

Experimental study, cefquinome treatment⁶

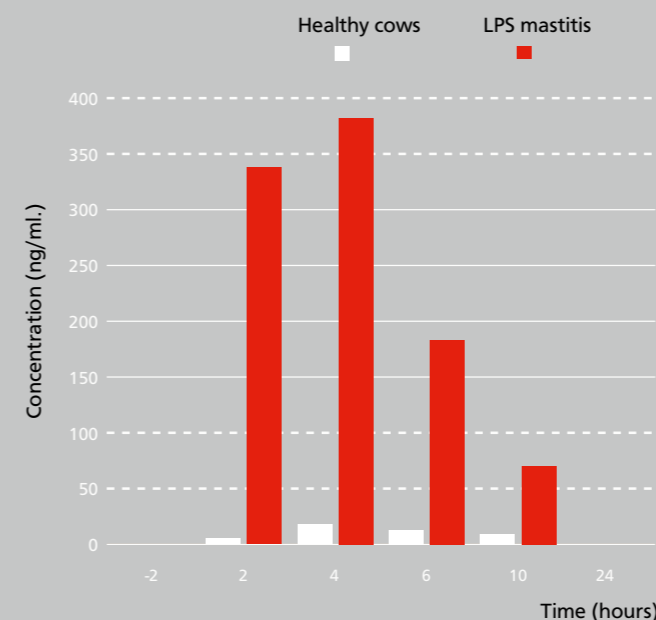


Parenteral treatment by itself provides good distribution of cefquinome throughout the udder.

Cefquinome delivered via local injection delivers a high dose in the infected quarter... the basis of effective mastitis treatment.

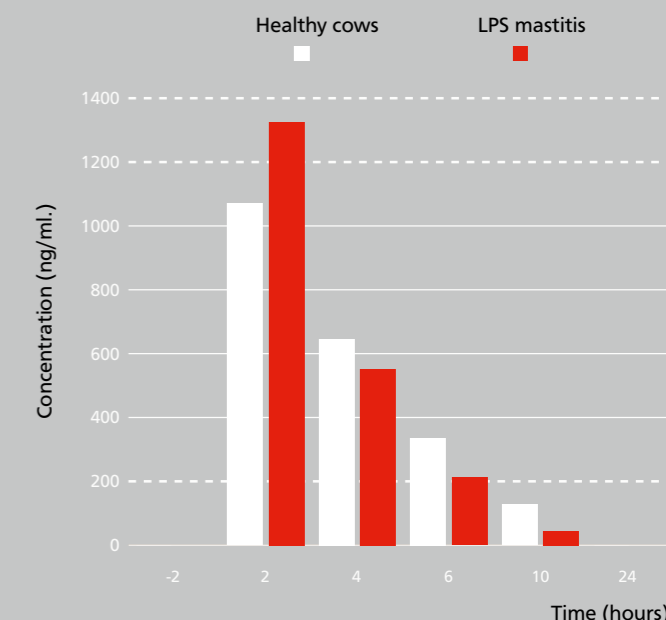
Combining parenteral and local injections ensures the highest concentrations of cefquinome in the infected quarter while treating the entire udder and eliminating pathogens in the blood.

Cefquinome concentrations in milk [ng/mL]⁷



In healthy cows cefquinome penetration in the milk is low, but in mastitis cows, changes in the milk pH cause cefquinome to penetrate the milk in therapeutic concentrations.

Cefquinome concentrations in blood plasma [ng/mL]⁷



In both healthy cows and mastitis cows, cefquinome concentrations are in therapeutic levels in the blood plasma.

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Intervet International BV - P.O. Box 31, 5830 AA Boxmeer - The Netherlands
Phone: +31 (0)485 587600 - Fax: +31 (0)485 577333 www.msd-animal-health.com
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