

THIS ARTICLE IS SPONSORED BY THE  
MINNESOTA DAIRY HEALTH CONFERENCE.



UNIVERSITY OF MINNESOTA

---

College of Veterinary Medicine

VETERINARY CONTINUING EDUCATION



ST. PAUL, MINNESOTA  
UNITED STATES OF MINNESOTA

## Antibiotic sensitivities and mastitis pathogens

Russ Bey

Many bacterial species may be involved in bovine intramammary infections. However, the most frequently isolated agents are environmental pathogens; non-ag streptococci (*Streptococcus dysgalactiae*, *uberis* and enteric cocci) and coliforms. The question which needs to be answered at this point is did these organisms come from the gland or are they contaminants? Who took the sample and how was it taken? Armed with the information that, in general, only one organism infects a quarter at a time a decision can be made regarding treatment. Questions one may want to consider, should this animal be treated with an antimicrobial agent? Is the cost of treatment justified? Can a therapeutic level of antimicrobial agent be achieved at the site of microbial attack? Once the decision to treat has been made and the bench marks for a cure defined, the next question is which intrammary product should be used?

If samples are to be submitted for antimicrobial susceptibility testing be sure that the laboratory follows the NCCLS (National Committee on Clinical Laboratory Standards [[www.nccls.org/](http://www.nccls.org/)]) guidelines and procedures. At a minimum, this will ensure that high quality reproducible results will be obtained. This is advantageous in that antimicrobial sensitivity patterns in a practice or on a dairy can be tracked over time and the development of potential resistance patterns monitored. In addition, it may help guide dry cow therapy and/or empirical treatment decisions on the dairy or in the practice.

Results of evaluating the antimicrobial patterns in the Laboratory for Udder Health for over the last three years indicates an increased susceptibility by the *Staphylococcus* species, and *Streptococcus uberis* and *Streptococcus dysgalactiae* to oxacillin (cloxicillin), tetracycline and streptomycin. There is a decrease in susceptibility to novobiocin among the enteric cocci, *Streptococcus uberis* and *Streptococcus dysgalactiae*. Little or no change has occurred in the susceptibilities of the Gram-positive bacteria to the other antimicrobial drugs.

For the first four months of this year, *Klebsiella* species have decreased in sensitivity to ceftiofur. Prior to this little change has occurred. The decrease in the number of isolates which are sensitive to cephalothin and streptomycin has been decreasing over the last three years. This decline may be due to the inappropriate use of these drugs or using them at subtherapeutic levels.

These results seem to indicate that the bacteria commonly associated with intramammary infections are generally not becoming more resistant to the commonly used FDA approved intramammary products. However, some resistance appears to be occurring to a limited number of antimicrobial products which are not intended for use in treating intramammary infections but are approved for use in lactating dairy cattle for other label indications. These products, if given to a lactating animal for another infectious process, may cross into the udder at subtherapeutic doses potentially inducing resistance in some environmental intramammary pathogens. Another possibility for resistance increase to some products is that because of the economic pressure to return the animal to production more quickly treatment protocols are not being followed and bacteriological cures are not occurring.