

Mastitis Therapy: Effective Treatment or Double Trouble?

*Mastitis Treatment Committee
National Mastitis Council, Inc.

1. **Coliform Mastitis! What do you use?** FDA regulations are such that a drug cannot be approved for use for lactating animals if the withdrawal period exceeds 96 hours. Most drugs which would be effective against gram negative organisms are, therefore, not available to treat coliform mastitis. Here is one approach to treatment:
 - a. Oxytocin
 1. Strip out the quarter: remove as much endotoxin as possible.
 - b. Corticosteroids and fluids to combat the effects of endotoxin.
 1. High doses of dexamethasone.
 - a. 10 mg/100 lb. body weight intramuscularly or intravenously.
 - b. once, possibly repeated at 8-12 hours.
 2. Large quantities of fluids are also important.
 3. The diagnosis is important; corticosteroids may be contraindicated in the treatment of mastitis caused by other infectious agents.
 - c. Gentamicin
 1. 100 mg. as an udder infusion b.i.d. (2 cc added to a sterile commercial mastitis product).
 2. 2 mg/lb of body weight I.M. b.i.d. for three days (only in systemic infection or valuable cows). Most cows do not have a septicemia; the systemic effects are the result of endotoxin.
 - d. **CAUTION**
 1. Gentamicin is **not** approved by FDA; it must be used only on a prescription basis.
 2. Prevention of drug residues requires a withholding time of **not** less than 120 hours.
 3. Gentamicin is **not** compatible with penicillin; if used together as an infusion, they must be mixed at the time of use. Some inactivation occurs in 6-8 hours, complete inactivation within 96 hours.
2. **Can you mix a better product than you can buy?** Perhaps, but is the risk worth the gain?
 - a. Products mixed in the veterinary clinic often violate FDA regulations.
 - b. Mastitis products must be pathogen free. It is virtually impossible to exclude yeast and mold organisms from products mixed in the veterinary clinic.
 - c. Combinations affect efficacy. Some combinations are incompatible.
 - d. The vehicle affects efficacy.
 - e. The vehicle and/or suspending agent affects the duration of residues.
 - f. Surveillance for residues is being markedly increased.
3. **Is penicillin as a mastitis infusion old-fashioned?** It may be old-fashioned, but it is effective.
 - a. *Streptococcus agalactiae* has never shown resistance to penicillin.
 - b. Penicillin remains the drug of choice against *Strep. ag* (the most common udder pathogen).
4. **Is the effectiveness of therapy related entirely to the drug selected?** Not entirely.
 - a. Proper stimulation, milk letdown, and stripping (and the use of oxytocin) may significantly affect results.
5. **Is intramuscular treatment superior to intramammary infusion?** No.
 - a. Drugs injected intramuscularly do not reach the infected quarter in sufficient quantities to eliminate the organism.
 - b. Intramuscular injection is not effective in the treatment of *Strep. ag* udder infection.
6. **What about vaccination?** Limited research would tend to indicate that vaccination is **not** effective in the prevention or control of mastitis.
 - a. The streptococci do **not** produce an antigenic response sufficient to warrant their use as bacterins to control mastitis.
 - b. Bacterins have been **ineffective** in *Strep. ag* control programs and of **no value** in the treatment of mastitis caused by *Streptococcus agalactiae*.
7. **Can milk from the three non-mastitic quarters be marketed?** Any time an animal is given a drug, regardless of the route of administration, that drug can only go a limited number of places. It may be deposited within the body, most commonly in the body fat, or it may be excreted. Small amounts may be exhaled through the lungs, excreted in the urine, eliminated in the feces, or secreted into the milk. A portion of most drugs is secreted in the milk from all four quarters. If a cow receives medication with a drug that has a required withdrawal time, the milk from all four quarters must be withheld.

Tetracyclines (and other drugs) infused into the uterus are excreted in the milk. FDA is now

*This information was supplied by Dr. Louis E. Newman, College of Veterinary Medicine, Michigan State University.

using a much **more sensitive** test to detect antibiotics. Veterinarians must warn the client to withhold milk.

- 8. **Are multiple dose vials really less expensive?** Perhaps not.
 - a. The use of multiple dose vials, syringes, and cannulas may be a serious cause of mastitis caused by environmental pathogens.
- 9. **When can nonresponsive cases be sent to market?** Label recommendations should be followed, but marketing animals which have received I.M. injections in less than 30 days results in the likelihood of carcass retention while tissues are submitted for residue testing.
 - a. Needle marks may be detected in a carcass for up to 30 days.

- b. FDA and state regulatory agencies have stepped up their surveillance programs to detect antibiotic residues.
 - c. Animals must be withheld from slaughter for at least 21 days following inoculation with biologics.
10. **Is there a satisfactory method to identify treated animals?** Yes, identification may be one to decrease residue problems.
- a. Plastic hospital identification wristbands may be worth considering as a means of identifying animals which have received dry cow treatment.
 - b. Yellow tail tags have been used successfully in Michigan to identify cows which have received treatment during lactation.

<p>WARNING</p> <p>THIS ANIMAL HAS BEEN TREATED WITH A MEDICATION THAT PRODUCES A TEMPORARY RESIDUE</p> <p>DO NOT SELL MILK UNTIL AFTER: _____</p> <p>DO NOT SLAUGHTER UNTIL: _____</p> <p>SUPPLIED BY MICHIGAN VETERINARY MEDICAL ASSOCIATION</p>	<p>WARNING</p> <p>THIS ANIMAL HAS BEEN TREATED WITH A MEDICATION THAT PRODUCES A TEMPORARY RESIDUE</p> <p>DO NOT SELL MILK UNTIL AFTER: _____</p> <p>DO NOT SLAUGHTER UNTIL: _____</p> <p>SUPPLIED BY MICHIGAN VETERINARY MEDICAL ASSOCIATION</p>	<p>WARNING</p> <p>THIS ANIMAL HAS BEEN TREATED WITH A MEDICATION THAT PRODUCES A TEMPORARY RESIDUE</p> <p>DO NOT SELL MILK UNTIL AFTER: _____</p> <p>DO NOT SLAUGHTER UNTIL: _____</p> <p>SUPPLIED BY MICHIGAN VETERINARY MEDICAL ASSOCIATION</p>
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PLACE AROUND
TAIL OR LEG

AFFIX ADHESIVE
SIDES TOGETHER



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NEW PROVEN DRY COW MASTITIS CONTROL PROGRAM

Dairymen earn more!

(\$100 per cow, per year¹)

On the advice of veterinarians everywhere, U.S. dairymen are gaining control of mastitis and increasing milk yields dramatically with a simple 5-step program! Most important step is dry cow treatment. The drug of choice is ORBENIN-DC (benzathine cloxacillin) — the antibiotic discovered, tested and proven effective by Beecham throughout the world² and in the U.S.³ Here's how Beecham experience pays off for the dairyman.

- Eliminates *Staph aureus*, *Strep agalactiae* including penicillin-resistant staph (the organisms causing 95% of mastitis.)
- Protects against new infections during the dry period.



- Bactericidal with prolonged release.
- Alcohol teat cleaning pad included with each syringe.

Other steps in the control program include hygiene, clinical treatment, equipment checks and teat dipping . . . ask your veterinarian about our new, inexpensive teat dip, T-D TABS®.

Sold only to veterinarians.

INDICATIONS: Orbenin-DC is indicated in the treatment and prophylaxis of bovine mastitis in non-lactating cows due to *Staphylococcus aureus* and *Streptococcus agalactiae*.

Appropriate laboratory tests should be conducted, including *in vitro* culturing and susceptibility tests on pre-treatment milk samples collected aseptically.

CONTRAINDICATIONS: Since benzathine cloxacillin is relatively insoluble, Orbenin-DC's activity will be prolonged. Therefore, Orbenin-DC should not be used for the occasional cow which may have a dry period of less than 4 weeks. This precaution will avoid residues in the milk following removal of the colostrum.

PRECAUTION: Because it is a derivative of 6-aminopenicillanic acid, Orbenin-DC (benzathine cloxacillin) has the potential for producing allergic reactions. Such reactions are rare, however, should they occur, the subject should be treated with the usual agents (antihistamines, pressor amines, corticosteroids.)

WARNING: 1. For use in dry cows only. 2. Not to be used within 4 weeks (28 days) of calving. 3. Treated animals must not be slaughtered for food within 4 weeks (28 days) of treatment.

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

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¹"Money Returns." National Mastitis Council, 1974 ²Brander, G.C., "Dry Cow Therapy As A Means of Controlling Bovine Mastitis." Vet Rec. 84, No. 17, 445 (1969). Tadworth, England. ³Hill, G.N., D.V.M., Keefe, Thomas J., D.V.M., Modern Veterinary Practice, Nov. 1974