

feasible to submit the samples from each case immediately to the laboratory, we may ask the client to freeze the samples and submit them to us at two week intervals. Four out of five or seven out of ten samples from which we isolate the same organism are far more indicative of the herd problem than the results obtained from a single sample.

A number of statements have appeared in print which have suggested that *Klebsiella* mastitis is related to hardwood sawdust. We are aware of a number of problems which have occurred where the cows were bedded on pine sawdust. In our laboratory pine sawdust grew the organism very well. Cedar was resistant.

We do not recommend that all dairymen change from sawdust to some other source of bedding. We think sawdust is one of the best bedding materials for dairy cows. It also has been particularly advantageous for some dairymen and the use of sawdust as dairy cow bedding has benefitted the wood products industry.

In those herds where we have made a definitive diagnosis of a *Klebsiella* mastitis problem, we have recommended that they change to a different type of bedding. We have never seen a *Klebsiella* mastitis herd problem on sand, crushed limestone, straw, chopped hay or kiln-dried shavings. In the few herds where, because of their manure handling system or other factors, it is impossible or unfeasible to change types of bedding, disinfection or sterilization of the sawdust may be indicated. In two herds our clinical impression was that by dumping a shovelful of lime on top of the sawdust in the back of each free-stall once a week we were able to control the *Klebsiella* mastitis problem. In other herds where we attempted to mix lime with the sawdust we did not feel our results were satisfactory. Paraformaldehyde pellets have been tried by others and show some promise. We have no research data to back up these impressions and additional work on the disinfection or sterilization of sawdust is needed.

We have used an autogenous bacterin in some

herds and the clinical impression is that it is helpful. Vaccination needs to be repeated at six-month intervals. Clinical cases usually recur if the vaccination interval is allowed to reach one year or longer. Again, there is no research evidence to indicate that the autogenous bacterins are definitely effective.

Feed should be available when the cow leaves the milking parlor. There seems to be an advantage to keeping the cow on her feet following milking during the period of time that the teat canal sphincter is contracting. Where herd problems exist, a careful examination of the milking system is indicated. A dry udder is basic to good udder health. In those herds that do not dry the udder following udder washing, often times simply introducing the use of individual paper towels can markedly decrease the incidence of mastitis caused by environmental pathogens. Teat dipping should be accomplished immediately upon removal of the milking machine.

Although *Klebsiella* mastitis is the only mastitis problem that we have associated with the use of sawdust bedding, I think we should be aware of the fact that we also isolated a number of other gram-negative bacteria from our samples.

And, finally, this brings us to the area of conjecture—wondering just what role sawdust, or *Klebsiella*, organisms might play in other conditions which we see in our domestic livestock. Cows which calve on sawdust certainly are going to carry some sawdust into the uterus during the calving process. To what extent might *Klebsiella*, or others of the gram-negative bacteria which are present in sawdust, play a role in postcalving metritis, particularly in those dairy animals which are prone to post-calving disorders. In fact, we now recommend that our dairymen place straw in the maternity stalls. We have experienced *Klebsiella* mastitis and *Klebsiella* metritis in sows that were bedded on sawdust. Is it possible *Klebsiella* mastitis and the resultant endotoxin production in as few as one or two mammary glands might play a role in the etiology of the condition we call MMA? And what about metritis and cervicitis in mares?

Mastitis Therapy: Effective Treatment or Double Trouble

*Mastitis Treatment Committee National Mastitis, Council, Incorporated

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.

*This information was supplied by Dr. Louis E. Newman



© Copyright American Association of Bovine Practitioners; open access distribution

SCOURS.

Only the scavengers come out ahead.

You can't blame coyotes for feasting on the carcass of a calf killed by reoviral scours. They're natural scavengers, cashing in on a rancher's unfortunate loss.

Unfortunate because the calf might easily have been saved with just a single dose of Norden's 'Scourvax-Reo'. That's all it takes. One oral vaccination within the first 24 hours after the calf is dropped. Field surveys show 'Scourvax-Reo' reduced the number of sick calves from 55% to 10%...reduced death losses from 10% to under 1%.

Even when prices are low, a calf is too valuable to end up as coyote feed. This year discuss the advantages with your clients of vaccination with 'Scourvax-Reo'—the world's first vaccine against reoviral scours.

Scourvax-Reo[®]
Protects calves against deadly
reoviral scours.



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-mastitis 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 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.