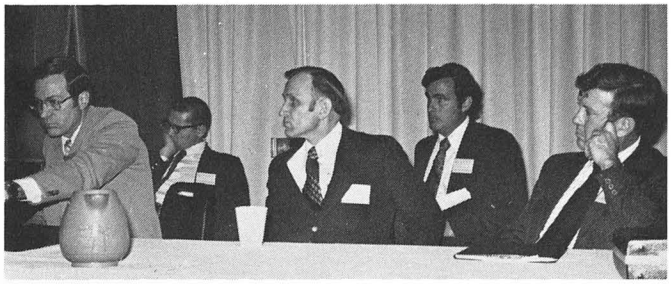
# Panel Discussion



*Question:* What products are used in the treatments of subclinical Klebsiella mastitis and what is the milkout time? How soon should you reculture?

*Answer:* I don't believe I would treat subclinical cases of Klebsiella mastitis. I think that you should direct your efforts towards control. Klebsiella is an environmental pathogen and therefore, it is going to be reintroduced in those situations. I guess at this point I'd have to say, too, we're not positive that there are subclinical cases. We think that a number of these have some leukocyte counts as a result of the Klebsiella being present, but it may, in fact, be that the Klebsiella organism is so widely prevalent in the environment that it is invading the teat canal. Maybe that's as far as it is going or maybe it is invading the gland. If the cow is resistant enough that it is being removed from the gland very rapidly at milking time in most of the animals, I would not try to treat those cases that are diagnosed as subclinical on the basis of culture. Milkout times, if we use gentamicin, you have a minimum of 120 hours withholding.

*Question:* Chloromycetin was mentioned in the treating of coliform mystitis. Was it effective? What dose rate since it is cheaper than gentamicin?

*Answer:* We used Chloramycetin initially in a number of our treatments, but we've not used it now for about two years. And I am not sure that I recall the dosage accurately enough to give it to you. So far Klebsiella has not shown any resistance to gentamicin so we switched over to gentamicin as far as use in the quarter is concerned, and we'd rather not have to use it systemically because as I indicated most of these cases of coliform mastitis are not systemic in nature. The effect that we're seeing on the well being of the animal is related to the endotoxin. So that is is only in the very valuable cow where it is used systemically. I would point out that several people like to use furacin to treat coliform organisms, and at one point, we were using it, but Klebsiella is a facultative organism and may be either aerobic or anerobic, fuxacin only effects Klebsiella in one of these modes. I can't remember the dosage of Chloramycetin we were using, but as I recall it I think if we used it systemically at two mg per pound of body weight. If we feel the need of a systemic drug many times we use something like oxytetracycline or liquimyacin intravenously with the gentamicin in the quarter.

*Question:* Assuming the dry-cow treatment program. Has any work been done on culturing cows at freshening to catch new infections during the dry period and then treating these cases at that time? If so, what product should be used and what results can be expected?

*Answer:* As I understand the question, the individual would like to know what has been done to culture the cows at the time they freshen so that they could be treated at that time. The cow has an increased susceptibility to mastitis during the last ten days of pregnancy. As she approaches parturition she is much more susceptible to the organisms, both gaining entrance and flaring up and causing real problems. Particularly the coliforms. This carries over into the first two weeks of the post-parturient period. So that dry-cow treatment would be aimed primarily at the existing infections at the time she is dried out and the first three weeks of the dry period since there is a much higher incidence of infection during the first three weeks of the dry period than at any other time. I am not sure there is much you could do, based on present knowledge, prior to parturition to block these infections from gaining entrance without creating severe residue problems and so forth–since the drugs that are effective against the gram-negative organisms for the most part are not drugs that are approved for use for either lactation or dry-cow use.

*Question:* With the problems of coliform mastitis presented, we seem to see two possible means of entry into the mammary gland–milking machine back flow and secondly, entry post-milking in a contaminated environment while the spincter is open. Which of the two is more common, and the percentage–which is the most important?

*Answer:* There is no way of answering that, but the coliforms are contaminating organisms that can be controlled by sanitation. So your effort is going to be almost solely by reducing the inoculums to which the cow is exposed. It's just plain doing the best job you can in management.

*Question:* To what do you attribute the high cure rate of hemolytic staphs. in lactating dairy cattle? I assume that means the high cure rate with treatment of cephalosporum compared to other antibiotics, where the cure rate has been less effective.

*Answer:* The high cure rate of hemolytic staphs in lactating dairy cattle. I think we can assume this to mean that the high cure rate of hemolytic staph in lactating dairy cattle is following our treatment with sodium sulfphyoidine. I think you can just say that this particular drug is very effective against staphs. It is also as effective against penicillin resistant staph. as it is against penicillin sensitive staph. so if you're

going to say that 38% of the staph. that you're treating is penicillin sensitive this is going to knock your cure rate down to about 60% to begin with.

*Question:* Please comment on the incompatibility of penicillin and nitro furazone in udder fusions?

*Answer:* Penicillin is not compatible with propylene glycol, first off, and secondly with the furacin. Penicillin and furacin are not chemically and physically compatible, and so they probably should not be used together in udder fusion, as I understand it. We are no longer using it, that was since we feel that we have other products that are doing a better job. You know, related to that dry cow question a minute ago and then Dr. Dahl's question regarding sanitation, as I indicated, we're trying to get these cows off sawdust bedding and we're making a tremendous effort both from the standpoint of mastitis and neonatal calf mortality to pay particular attention to the area in which the cow calves; the type of bedding on which she calves, and the dryness of the maternity stall. There are a number of questions here related specifically to penicillin and furacin. I'm not a pharmacologist and I am not able to answer them any better than that.

*Question:* Do you have any information on how the results of the Hotis test and TKT* correlate? Is EMB useful? (EMB = eosin methylene blue)

*Answer:* TKT and Hotis should correlate very nicely. I personally, however, don't like the Hotis test. I would much prefer to use TKT, I prefer to be able to see an organism grow on a plate, and if I want to do a susceptiblity test or anything else I want to do with it, it is there in front of me. I've worked with Hotis and it has not worked that well for me. Not as well as TKT has worked. I'm very happy with it. One would expect that the results would correlate very nicely as far as Strept. agalactiae is concerned. Is EMB useful? EMB will do exactly the same thing for you that Mac Conkey will do in terms that it's inhibitory to gram-positive organism and it will let the gram-negative organisms grow. However, I find that in working with veterinary students, they have an easier time interpreting what the various coliforms look like on Mac Conkey than they do on EMB. The differences involve perhaps a sheen. It is not a clear cut difference, I believe, as there is in Mac Conkey's and so I find that in working with students that they can interpret better what they see in Mac Conkey's than what they see in EMB and so I use, exclusively, in my own classroom teaching, use Mac Conkey's. I just think it's an easier medium to interpret.

*Question:* What is the AABP Mastitis committee doing? Have they formulated recommendations on mastitis control? Will they be published?

*Answer:* There have been published in the AVMA journal minimum standards for veterinarians doing mastitis work. I think this was probably in July of last year. The AABP committee would go along with these standards. In addition, there has been in the last two or three years a milk quality seminar held prior to each AABP meeting and these are oriented towards teaching people to be efficient in meeting those standards. I think these standards were also published in *Hoard's Dairyman* a couple of months ago.

*Question:* I have had three herds in trouble with Klebsiella when cornstalks were used as bedding. These cornstalks were cut, racked and stacked without being dried. The heating in the stack incubated Klebsiella which was readily cultured. Would you suspect that bird droppings inoculated the stack or did it originate in the dead cornstalks?

*Answer:* I have not had this experience. I have heard a few others suggest perhaps that Klebsiella could occur in cornstalks. We have not seen a lot of Klebsiella in fecal samples that have been cultured. There have been some Klebsiella seen in the fecal samples, but not near the extent that we would see *E. coli*. I think anything we do would simply be speculation. Again, three herds in trouble with Klebsiella, and I don't know enough about the herds, and I'd enjoy very much talking to the individual at some other point during the meeting, but one of my concerns would be in fact dealing with Klebsiella mastitis or mastitis that is caused by something else and that the cultures here may be contaminants. As I indicated, about 2/3 of the herds where we have thought that we were dealing with the Klebsiella problem, when we got into it, we may have had one or two cases of Klebsiella mastitis, but that the herd problem was not Klebsiella. What I'm saying is that we get individual cases of Klebsiella mastitis just as we get individual cases of *E. coli* mastitis. And on the west coast, in California, those *E. coli* mastitis become very severe herd problems, and in Michigan we get very severe problem herds of Klebsiella on sawdust bedding. The individual cow cases tend to be the same kind of management cases as *E. coli*, and based on my own experience, and I hasten to point out that our experiences differ, (and I could sure be wrong), I'd be inclined to think that perhaps the major problem here is not Klebsiella. I'd like to come back to that other question about furacin solution. Thirty cc's of the solution only provides you with 60 mg of the active product.

*Question:* What is the shelf life of the media you mentioned? And after treating an infected quarter and getting limited response, when can you reculture and expect growth?

*Answer:* By and large, one could expect that any media containing blood probably has an outside shelf life of 40 days, maybe even stretch it to 50 which, I might add, is one of the reasons Pitman Moore in their bactoassay plate does not use any blood-containing media because they will not ship anything that does not have at least 45 days of shelf life left. I think that is the way they state it. So probably somewhere around 40 days you could probably squeeze a little bit more out of it. I will plead a little

bit of ignorance on TKT. I spoke to the people at Gipco Diagnostics and Addison who market this, and one of the marketers of at least the dry powder. They indicated to me that perhaps somewhere around two weeks to three weeks, but I'm not sure. I talked to a production man rather than a technical man, and that was his reply–that they should be used up within a two week period. As to how soon afterwards you want to culture, here again I think you might get a little bit of lag in response, and therefore, your culture is negative. One of the reasons that it's negative is that you're getting a lag in response. On the other hand, if an organism is resistant to an antibiotic, by and large, I feel that there really is no minimum time. If it is going to be resistant it may well grow up when you get it out on to culture media. Although here again, this will vary somewhat. There may be enough antibiotic to cause some inhibition, but if the organism is resistant, I usually say we will go ahead and bring one in right now. But then, again, there might be some lag in response, and you have taken care of the organism, and you are simply not getting out. I think those are the two possibilities.

*Question:* You stated 200 mg of Caphalosporon was used for treatment. How and what vehicle was used for infusion?

*Answer:* I didn't go into detail on the preparation itself. These cows were treated with 200 mg of cephalosporon in an individual treatment syringe which was produced by Bristol Laboratories. The vehicle was an oil vehicle. At this particular time, I am at a loss to say whether it was peanut oil or not, but it was an oil base in a 10 cc individual treatment syringe. I might add to the previous question on the recovery of hemolytic staph. The particular dairies we were using this in were not high producing dairies. We were not treating cows which were making 60 or 80 pounds of milk a day. We were treating cows which were making about half that. So I think that you ought to figure your dilution figure might enter somewhat into the increased recovery rate. Plus the fact that these cows are not stressed, if you want to use the word stressed. They were not under stress at the time we were treating them.

*Question:* Do you agree with the practice of dipping teats one week after drying off and beginning again about one week before parturition?

*Answer:* The answer is yes. It is difficult to accomplish in many situations particularly from a nutritional standpoint where we want to get these animals separated out from the milking herd. But I think there may be some advantage in teat dipping during these periods particularly in those herds that have a severe coliform problem.

*Question:* Is there an advantage to selectively treating dry-cows depending on culture results? Does dry treating everything eventually lead to low leukocyte level in the herd, therefore making the herd more susceptible to *E. coli* and staph mastitis? I think they're questioning the recommendations to infuse all dry cows. Should we do it selectively? If we do it in all dry cows is that going to make them more susceptible to some other infections?

*Answer:* That's an argument that 's raging. I don't think it is anywhere near resolved. I think it depends in part on the incidence of infection when you start. If you have a herd that is really badly infected and you want to make rapid strides in reducing the problem you will probably treat all of the cows on drying off. In those herds where we have streptococcal problems I always thought I had at least as good a response in the milking cow as I did in the dry cow. I could see no point in waiting till the cow dried off to try and recover her milk production in the next lactation. Why not get it this lactation? So we would usually go through and treat immediately on the streptococci and clean them up in that respect. And once we got down to no more than 10% of the animals involved, which I think is a difficult figure to reach pretty quickly, then we would select a retreat. Now, listening to the mastitis seminar yesterday, the opinion seemed to be cautious although most of the people who were there were treating all of the cows as they dried them off, regardless. But some apprehension as to what might happen. It still seems to me to be injudicious use of antibiotics to simply treat every cow in every quarter. And once you start getting into these problems where you've got those very low leukocyte levels, this, I would speak fairly categorically, your management better be good. And when your management is good seven days a week, fine. But if your management is going to be poor at times, I would rather have a few leukocytes sitting around.

*Question:* We have checked teat dips against Klebsiella by the use of sensitivity plates blood agar and found only halvalsan and Clorox to be effective. I'm assuming that they're leaving out the iodophonen on purpose. Do you have any comment on this?

*Answer:* The comment I would make here, and this would probably apply to any antiseptic or disinfectant, is that where you use it under ideal conditions, it is apt to work. I think what it boils down to is how is it going to work in the field. And the point that I'm trying to make here is that a number of these, and Nolvalsan and Clorox are two of the worst offenders, have a real propensity for combining with organic material. This tends to inactivate them so that on an *in vitro* test almost any antiseptic is apt to work. So when you then put it in practice where you could have some fecal material–some organic material–it may then be inactivated. I think this is the only way I can respond to that one. I would think that if you tested an iodophorue under similar conditions that it would equally be effective. Most disinfectants when you treat them *in vitro* under ideal conditions are good. It's when you get them and start mixing them with organic material that they start to fall of markedly. Nolvalsan and Clorox are two of the worst ones that start to fall off very quickly.

*Question:* In stystemic treatment of coliform

mastitis, can you interfere with rumen bacteria? Also, are oral fluids helpful in the treatment of endotoxic mastitis?

*Answer:* I would say it definitely could interfere with rumen bacteria. With any treatment you use systemically; but practically, it is probably not going to be a problem and where we are dealing with an animal where we're attempting to be lifesaving, I guess that would be the first consideration. We have not used oral fluids to any great extent in the lactating cow primarily due to her size and the amount of fluids that would be required. We've gone primarily to intravenous fluids in those animals that were dehydrated bordering on endotoxic shock. We have not used oral fluids, and I am not in a very good position to anser the question.

*Question:* Other than the penicillin is there any other commercial mastitis tube that gentomycin will be in antagonism with?

*Answer:* I'd be quick to point out that penicillin and gentomycin are not antagonistic to any great extent when they're used systemically. It works quite well. Again, I'm not a pharmacologist. I glean as much information as I can and I've tried to point out a few of the problems that you might encounter in using some of the mastitis products. If they are incompatible and inactivate each other, this starts within 6-8 hours, and at the end of 96 hours you have inactivation of both drugs. This precludes mixing such products ahead of the time you intended to use them. I can't answer the question further than that.

*Question:* Did you use oral or sterile injectible Chloromycetin in the quarter and what did you mix it with? (What commerical tube?)

*Answer:* When we were using Chloromycetin, we were using the injectible product and we were mixing it with sterile distilled water. We did not mix it with commercial products.

*Question:* Many cases of cultures of mastitis at our diagnostic lab have yielded no Klebsiella. Sawdust over clay is used almost exclusively in all the dairies for free-stall housing. I understand others have had severe problems with sawdust. How do you explain our escaping the problem in our area? (S.W. Virginia(

*Answer:* As I indicated, this has been a very serious problem in Michigan. However, I don't mean to suggest that all herds on sawdust bedding have that problem. We feel that sawdust is an excellent bedding and should be used by most dairymen. In fact the number of herds that will have the problem is very small. Those herds that most often have the problem are high producing herds–very good management, low strep, low staph–so probably I'd have to say the reason he's not having the problem is related, perhaps, to the method of logging in their area that results in the sawdust not being contaminated with the organism or the method of storing the sawdust. The organism may be destroyed within that sawdust prior to the time it is used for bedding, or that he is dealing with low producing herds or herds that are heavily infected with strep or staph, or poorly managed. In other words, there is a competition there. The gram-positive bacteria tend to be bacteria static to the gram-negative bacteria. If we have high populations of the gram-positive bacteria, and of course this would indicate that probably we have a tremendous economic loss within the herd because of them, we probably are going to have no Klebsiella problems. If we have relatively high leukocyte counts in those cows, that is, any cow that has a leukocyte count of over 400,000 or 500,000 is not going to have a Klebsiella problem. And so I have to think that these things are precluding the problem in these herds. If they are, then loss of production is greater than if they did have a Klebsiella problem. You may have noticed that Dr. Joe Kawolski and I are doing a little collaborating here on the platform. I should indicate, I guess, that the Klebsiella research we did was a team of three, and certainly, I didn't come up with all the answers. He was the microbiologist. Joe and I have made a number of trips to the field boring trees and to sawmills , etc. The third man was a man named Henry Huber in the forestry department whose primary interest is with products. It was a case of teamwork where a group of people had expertise in three very different areas.

# What makes this "milk saver" so exclusive with veterinarians?


Hetacin-®K (potassium hetacillin) Intramammary Infusion for lactating cows is in a class by itself. For one big reason. Hetacin-K is the only mastitis control preparation for lactating cows sold exclusively through you—the veterinarian.

What's more, Hetacin-K is a real "milk saver." Because it destroys most of the major bacteria causing mastitis. Hetacin-K eliminates most *Streptococcus agalactiae, Streptococcus dysgalactiae, Staphylococcus aureus* and *Escherichia coli.* Returns high pre-test CMT scores to near normal.

Here's a product that controls most mastitis organisms without adjunctive therapy. Hetacin-K offers both broad spectrum and bactericidal activity. For treatment of acute, chronic or subclinical bovine mastitis. The single antibiotic for truly broad spectrum coverage. Priced right for you.

No dairyman can forget Hetacin-K once he's tried it. The "milk saver!" And the only mastitis control preparation for lactating cows sold only through you.

Precautionary Information: Federal law restricts this drug to use by or on the order of a licensed veterinarian. For use in lactating cows only. Hetacin-K does not resist destruction by penicillinase, and hence, is not effective against strains of staphylococcus resistant to penicillin G. This drug has the potential for producing allergic reactions. However, such reactions are rare. Milk that has been taken from animals during treatment and for 72 hours (6 milkings) after the latest treatment must not be used for food. Treated animals may not be slaughtered for food until 10 days after the latest treatment.

BRISTOL BVP

BVP 76-3-75

Veterinary Products, Bristol Laboratories, Div. of Bristol-Myers Co., Syracuse, New York 13201