Panel Discussion

"Questions About Bovine Practice You've Always Wanted To Ask"

Moderator: Dr. John Herrick
Assistant Moderator: Dr. Harold Amstutz
Panel Members: AABP Directors

AABP Board of Directors

Question: What's the choice treatment for Klebsiella mastitis?

Dr. Shank: We've had quite of bit of coliform mastitis lately. We have Klebsiella and unless she's an extra good cow, the best place to take her is to the stockyards before she dies. Now, if you are going to treat this cow, do so intramammary. I use Neomycin, and I'm putting in about 250cc physiological saline along with it and a little steroid, in order to take out the inflammation. I usually have to treat a toxic cow. Trying to keep the cow alive is the biggest concern, not just losing that quarter. Tylosine has given good results in some cases.

Question: Do you feel there is a definite association between using shavings for bedding and Klebsiella infection?

Answer: I definitely believe there is. I have one herd that has about 400 milking cows and we had Klebsiella mastitis. We took them out of the free stalls, removed all the shavings and put sand in and 48 hours later, believe it or not, we never had another case. Another thing that is associated with it is running the cows through the milking parlor with a wet udder. This will definitely cause coliform mastitis because coliform is a natural inhabitant of manure, etc., and if you have water on the udder (I'm not talking about drying the teats) you are going to have water trickle into your milker. Since the canal is open, water and dirt get into the teats. A microbiologist recently did some of the original work on Klebsiella mastitis and pretty definitely showed the association between sawdust or shavings and Klebsiella mastitis when used in free stalls as bedding. One of the recommendations is that when this is diagnosed, clean out the free stall area and not only remove the bedding, but take out the back part where the cow's udder might by lying, and replace that with clean clay, if it happens to be a clay bottom, and thoroughly disinfect that area. That seems to be a big help.

Question: Has anyone had any experience with hyperimmunized blood?

Answer: I've given blood transfusions to them, and some of the cows have recovered.

Question: How much iodine should you add for uterine infusions?

Dr. Bracken: We use a 2% solution of Lugol's in the uterus from time to time.

Question: What's your favorite treatment for mycoplasma mastitis? How hard is it to culture?

Dr. Allenstein: I have no answer for this question. I find it very, very hard to culture and I have no treatment for it.

Dr. Harris: We have no treatments that seem to work.

Question: What does it look like? We've never seen it.

Answer: Incurable mastitis and using dirty equipment. We don't see enough of them to see if there's a real standard pattern.

Question: What do they do in Canada?

Dr. Radostits: We have investigated three outbreaks of mycoplasma mastitis in cattle. The milk is quite characteristic, I think you should know that. When you put it in a milk vial and let it set

for a while it settles into sediment and supernatant fluid. If you tip the vial, the sediment clings to the side. A little reminiscent of coliform mastitis milk after you let it set for awhile, but it is much worse in mycoplasma mastitis. The mycoplasma that we get in Canada is sensitive to a wide variety of common antibiotics. My choice would be oxytetracycline. We don't often get proof of our cures until the next lactation because most of these quarters do dry up. We think we have successfully eliminated the organism from the mammary gland with oxytetracycline.

Question: We have a dairy herd that is well fed and well managed. Several cows show varying amounts of pus 24 hours after heat is over. Pus will persist for several days and will then disappear about the time the next heat arrives. This occurs with or without insemination. All are bred AI. The cows breed after several heats. Cultures are negative and the uterus is normal in palpation.

Dr. Faulkner: If it's a dairy herd that is well fed and well managed, I don't know.

Dr. Sexton: I think you are probably committed to try to treat them. In our practice we'd probably try to infuse them with Lugol's solution. I've thought at times that did some good. Maybe they were going to clear up anyway.

Question: Do you feel that this might be some of the "fat cow" syndrome? You may feed too much during the dry period and then they will "pus" after they calve?

Answer: I think that there probably is some sort of nutritional factor that we don't understand. It seems like it does occur more with herds that are on a high silage ration. We are suggesting that they go to more hay.

Dr. Allenstein: There's no doubt in my mind that we see this in the fatty cow syndrome. I am sure that I see more vaginitis, cervicitis, and mastitis. When you said a well fed herd, that's the first thing I thought of. I'm sure that we are seeing a leucopenia and definitely a drop of leukocytes at calving for as long as three to four months afterwards. This is the kind of thing that comes along in herds after several years of this good feeding—too much carbohydrates, too much corn silage, not enough hay.

Dr. Noordsy: I agree to a certain extent. If they felt the uterus and it felt normal, this doesn't really fall in line. Usually the tone of the uterus is the tipoff.

Question: This fat cow syndrome has been getting a lot of publicity in the dairy magazines. Are you running into it in your area in Kansas?

Dr. Noordsy: Yes. Very much so. Probably the acute phase of it is that these particular cows will not respond to surgery and alluding to what Dr. Allenstein said, you do have a leucopenia and these cows have no particular resistance, so any surgical intervention (and incidentally, displaced abomasum is another thing you see in this particular syndrome) is not well responded to.

Question: Do you consider "downer" cows have distinct metabolic disease? Do they go along with hypoglycemia, nerve injury, muscle injury, etc? Do you see "downer" cows in this particular syndrome that you are discussing?

Dr. Noordsy: The "downer cow" syndrome is a multitude of things. You see weak cows and you see some muscle damage in some of them, but probably it's a weakness and secondary muscle damage. Usually with these we're associating smooth muscle tone with a fat cow syndrome. We like to use a lot of Vitamin E to try to tone up the muscles. I don't think that the "downer cow" syndrome fits into this one.

Dr. Amstutz: I wonder about the possibility of selenium. We had some herds that seemed to respond to selenium.

Question: How do you repair right side DA's and what's your follow up?

Dr. Hoffsis: When we talk about right sided abomasal problems, I think you have to decide how much torsion is in the organs. It makes a big difference on how they respond to surgery. When I diagnose a cow that I think has abomasal pain on the right side, I go immediately to surgery, because in some cases it may be an emergency situation. Sometimes when we get in we will find that the organ has just rolled up about 90 degrees out of position. You get very good recovery from these.

The next condition is a complete torsion and we think it is important to determine whether the omasum is also involved in the torsion. The abomasum is twisted and the omasum is also included in this torsion. Then I think the prognosis is much worse. We find that we have almost no survival on the long term basis on the ones that have the omasum included in the torsion. On just abomasal ones, the prognosis is a little bit better. It depends on how much damage there is, how long it has been there, and how tight it is twisted. After correction we always do some kind of fixation.

Question: What about cows that have glycosuria with these right sided displaced abomasum and respond to insulin therapy?

Dr. Hoffsis: Well, we see that once in awhile. We do see some glycosuria and I think we find glycosuria even associated with normal serum glucose level. I'm not sure what's causing glyco-

suria in these cows. I think you should keep in mind that insulin is probably rational therapy for ketosis, which most of these cows have, so I would expect there would be some response. Insulin coupled with steroids or coupled with more glucose therapy.

Question: Are you saying that you are using insulin and no surgery and that takes care of it? Or are you using insulin combined with surgery?

Answer: No, I'm saying that sometimes we get a cow that has glycosuria with LDA or RDA and they don't seem to respond to anything. I can think of a couple of instances where we have done glucose level testing and it was negative. The cow did not respond and was going down hill after she had surgery and therapy and none of it did any good, but she responded to insulin therapy. This was about six weeks after surgery.

Question: What is your favorite treatment for chronic cough in an otherwise apparently healthy young dairy stock? They weigh between 400 to 700 lbs.

Dr. Bracken: Well, let me give my lie and half truth first and then we'll go from there. The first thing I would think about in the essentials of treatment would be examining them for the possibility of lungworms. This is something we really didn't recognize until the last year in my area and we found out all of a sudden that we have a lot more lungworms than we thought we had. We used Ribicol injectible, which is fine, but don't think you are going to get away with one or two injections if they are very bad, because we tested a chronic respiratory calf two weeks after the injection. We opened the lungs and there was as good a collection of lungworms in there as you ever wanted to see. So, if you are treating with Ribicol, you should expect to repeat the injection at two week intervals, two or three times. I'd like to bring up something since you end up treating what comes to you, in this day and age of the hippies living off the land. I think one of the biggest changes we see in the clinic is that we get from two to five goats coming in every week. It is quite surprising that an amazing percentage of them have chronic lungworm problems!

Question: Do any of the panel members believe in Hemophilus infection?

Dr. Barron: I think we're going to have to start believing in it. Most of the respiratory problems that we've seen that we think are caused by Hemophilus have little bilateral spots in the lower parts of the larynx. These calves are chronic "Honkers." They show upper respiratory distress whistling sounds.

Question: What can we use to abort heifers?

Dr. Faulkner: I think you can still use estradiol benzoate. Also, if you can catch these early, up to maybe 60 or 70 days, it is relatively simple either to decapitate the fetus or rupture the amniotic vesicle, but I think beyond that you probably could use estradiol benzoate.

Question: What about prostaglandins? Have you used that?

Dr. Radostits: At $22.00 a dose?

Question: How about ECP?

Dr. Bracken: A single injection, if I remember correctly, 10 or 15 milligrams, is adequate up to about five months of pregnancy.

Dr. Amstutz: We are investigating the possibility of prostaglandins but they do not seem encouraging.

Question: A recent survey by a consulting firm in the United States has shown that "shipping fever" costs the beef industry $4.00 for every beef animal marketed. Is there any sound scientific evidence that vaccines are increasing or decreasing this loss?

Dr. Barron: I think that during the time that there has been increased use of the vaccine, there has been tremendous development within the industry of long distance transportation of cattle that has certainly overweighed any significant advantage from the vaccines. We have not seen increased use of these vaccines in a pre-conditioning situation. We see them used in millions and millions of dosages after the animals have been distressed and worn out on arrival at the feedyards. Here at the feedyard level, I'm inclined to doubt that they save anybody anything.

Dr. Radostits: Well, perhaps I should define what we in Canada call "shipping fever." We are a bit at odds with the research workers in the U.S. When we consider shipping fever, we are talking about pasteurella pneumonia. I'm really not in love with this so-called "shipping fever complex" which includes IBR, PI3, and bovine virus diarrhea. When we talk about shipping fever, we're talking about pasteurella pneumonia. Thus far, our interpretation of literature is that there is no effective vaccine or bacterium for pasteurella pneumonia in cattle. Almost no research has been done at the commercial level. On testing these bacterium, very little research has been done in the laboratory to reproduce the disease. I think that Guelph people are doing some good research in attempting to reproduce the disease in calves, but it is very difficult to reproduce. You ask the question—what about IBR, PI3 vaccines immunizing the calves against IBR and P13, which is purported to pave

The Difference Between Nasalgen IP and Intramuscular IBR/PI_3 Vaccines is Protection of the Respiratory Tract Mucosa Against Damage

Figure 1 shows normal bovine respiratory tract mucosa before infection by IBR virus. Figure 2 shows the extensive cilial and epithelial cell destruction of the mucosa 7 days after exposure to IBR virus.

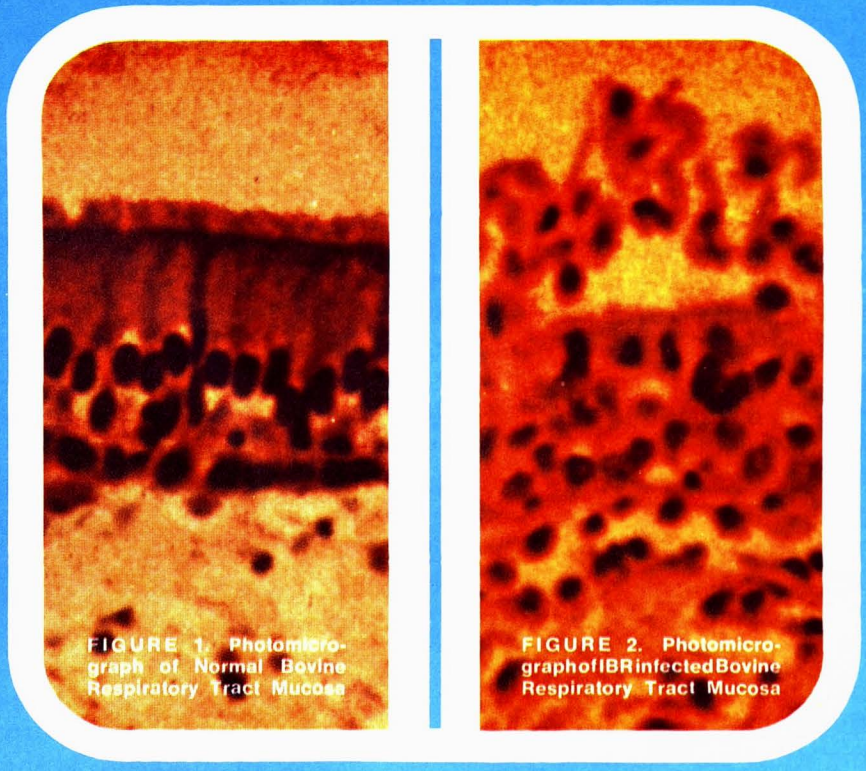


FIGURE 1. Photomicrograph of Normal Bovine Respiratory Tract Mucosa

FIGURE 2. Photomicrograph of IBR Infected Bovine Respiratory Tract Mucosa

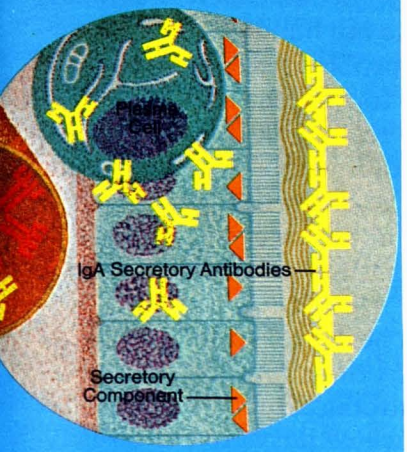
Photomicrographs from Shroyer, E.L., and Easterday, B.C.
Studies on The Pathogenesis of Infectious Bovine Rhinotracheitis.

Protection of Respiratory Tract Mucosa Is Possible.

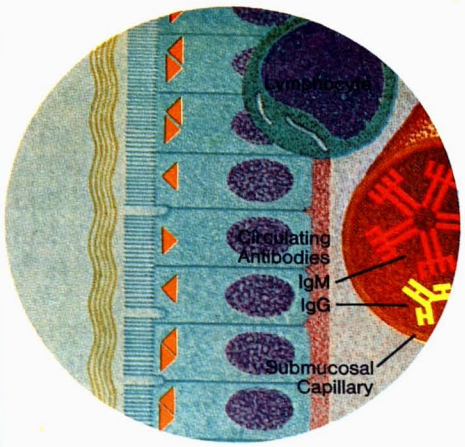
Nasalgen IP has been shown to be effective in consistently stimulating secretory antibodies which protect the respiratory tract mucosa against damage by IBR/PI_3 viruses. This protection is not expected of intramuscular vaccines.

The photomicrographs above and the schematic drawings on the facing page conceptually illustrate this difference in protection between intranasally and intramuscularly administered vaccines.

Nasalgen IP, IBR/PI$_3$
vaccinate

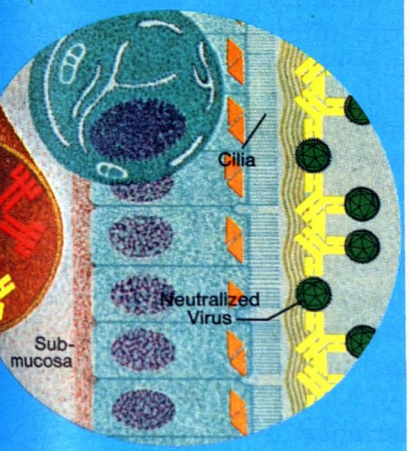


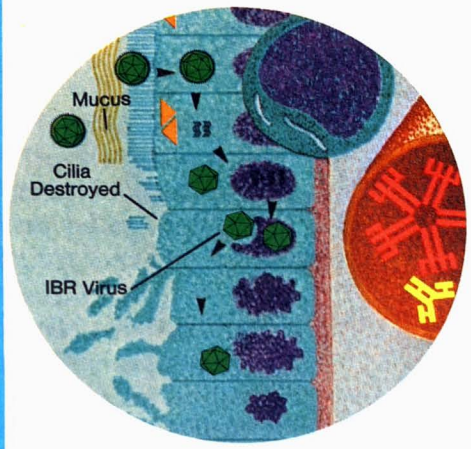
Intramuscular IBR/PI$_3$
vaccinate



Nasalgen IP
The calf vaccinated intranasally with Nasalgen IP has plasma cells producing high concentrations of secretory antibody which are present on the mucosal surface. Circulating IBR/PI$_3$ antibodies (IgM and IgG) also produced by Nasalgen IP are present in submucosal capillaries.

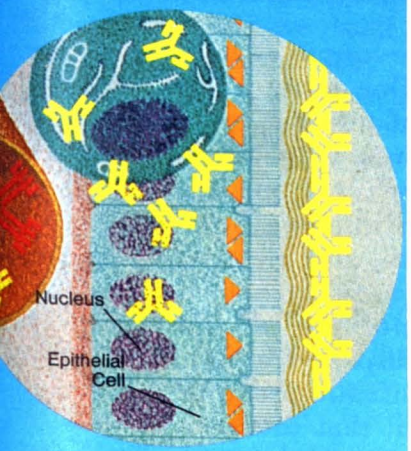
Intramuscular:
The intramuscularly vaccinated calf has not produced secretory antibodies and its mucosal surface has no IBR/PI$_3$ antibody protection. It has produced circulating IBR/PI$_3$ antibodies which are present in the submucosal capillaries but out of reach of the mucosal surface.

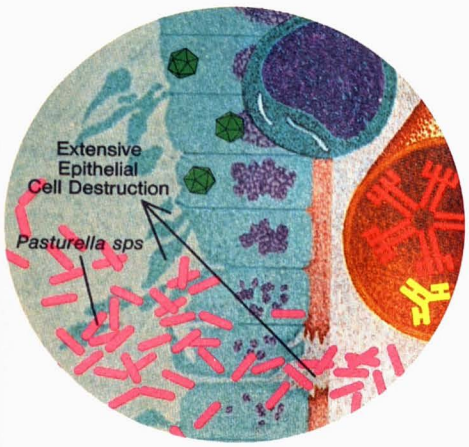




Nasalgen IP
IBR virulent field viruses are neutralized by secretory antibody, thus the respiratory tract mucosa is protected from invasion and damage.

Intramuscular:
IBR virulent field viruses invade the unprotected mucosa and multiply, causing extensive cell damage. (See photomicrograph in Figure 2). Circulating antibodies are unable to reach invading viruses until released as a result of epithelial damage and inflammation.





Nasalgen IP
Secretory IBR antibodies produced by intranasal vaccination have neutralized the field IBR virus. The mucosa has been protected and remains intact to provide the natural protective barriers against secondary bacterial infection.

Intramuscular:
The products of cell destruction promote the invasion and growth of bacteria such as Pasturella which can cause shipping fever and severe lung damage, even in systemically protected cattle.

NOTE: Schematic drawings are not to scale.

74-10-1163

Jen-Sal®

Jensen-Salsbery Laboratories
Division of Richardson-Merrell Inc.
520 W. 21st Street, Kansas City, Mo. 64141

the way for pasteurella pneumonia? My simple answer is—I don't know! The research evidence reports that these viruses are probably not important, but we don't really know for sure. There is a little bit of evidence that PI3 infection may damage the respiratory tract in cattle and allow pasteurella organisms to get down in to the lung, but I don't think we know enough about it yet. It is my impression that these vaccines, IBR, PI3, pasturella vaccines, have not reduced the incidence of pasteurella pneumonia in our country, but we don't know, it's just an impression.

Dr. Harris: As far as pasteurella in California and in our particular practice, we're talking basically of dairy calves. We have serious problems with pasteurella, starting at six weeks up to three or four months. We feel, particularly in the Holstein breed, that we have some help by vaccinating calves with a bacterium. We're using a Diamond brand, 2 cc per dose, and we start them, if they have a serious problem, every two weeks and try to get at least five doses into them before they get off the bucket. We're convinced that we have helped many of these herds. By the same token, we have proved it to our clients, because so often in the summer they'll go off it and then about August or September we get into a serious problem again, as we get into the cool nights. If they'll go back on a rigid program of vaccinating and try to get at least four to five vaccinations into these calves before they get off the bucket, it seems to have been a real help to us. Now that doesn't clear it all up, I'm sure there are other pneumonias that come in behind it, but as practitioners we don't really get too many autopsies on these small calves. Jerseys—we haven't seen as good results. Perhaps it's the clients that are using it, I don't know. We start them at day one. What we tell them to do is to vaccinate every calf the day they vaccinate, whether he's a day old or two weeks old.

Dr. Amstutz: I share Dr. Harris' thoughts. I'd like to say just a word about IBR vaccine. We have done some work with the field vaccine at Purdue and I think it's a great vaccine where the cattle do get exposed to the virus. Where we have exposed them to the virus, there's absolutely no difference. We had an entirely different story with Nebraska. It held 100% of the cattle we worked with. I realize some of you have not had that experience, but we are having right now. Where we have again insufflated the nostrils with a virulent virus of IBR, it held the line and the ones that were not vaccinated had sickened well down the line up to 60 and 70%.

Dr. Herrick: Frankly, I don't think this question can be really answered by whether or not the vaccines help. Sure, they're improved, I think they've been a great help, but when you take into account the complexity of so-called "shipping fever" and the way cattle are handled, and you are expecting to solve this problem with a vaccine, I think you are expecting too much, and that's why you haven't seen good results. I think when we start taking a look at the whole way cattle are marketed and handled, and we can get into this problem in much more detail, we will be able to evaluate the vaccines much better than we have at the present time.

Question: What's the best procedure for handling IBR pasteurella infections in 300 lb. calves shipped to Western Oklahoma from West Virginia?

Dr. Herrick: I think we've answered it already.

Question: What are the possibilities of oral BVD immunization? Would immunity be established more rapidly and would the immunization reaction be more severe than the current intramuscular route?

Dr. Mackey: It came up today in our meeting.

Dr. Amstutz: I think we should be able to take a so-called educated guess at that. If we think about the pathogenesis of bovine virus diarrhea, I think there is good evidence of viremia.

Question: What has been the panel's success with the Rheo-virus scour vaccine?

Dr. Hutchins: We are trying it now on an experimental basis.

Dr. Sexton: My experience is too limited to speak.

Dr. Shanks: I've used some, but I don't have any results as yet.

Dr. Hoffsis: We had a couple of herds that had experiences both ways. One extremely good, that I can think of, was one of the first to use it in our state. For a couple of instances it didn't seem to have any effect. Then one other one that I thought illustrated a point—one owner was losing virtually all of his calves near birth, and they started on the vaccine, without a diagnosis. They had terrific results, just virtually shut off all the loss. The veterinarian who had dispensed this went back later to examine the situation and restock the supply and he found out that the owner had just given the diluent! He hadn't given one single dose of the virus! It pointed out to me that you always have to keep in the back of your mind what might have gone on if you hadn't made any change in the vaccination program. These things do tend to cycle. You always have to keep this in mind and remember it in your results.

Dr. Noordsy: Very limited, and I can't top the last one.

Dr. Radostits: Only half an hour? This is something we are particularly interested in in our cow-calf operations in western Canada. We have found the Rheo-virus in some herds with the problem of scours. We hope to be trying the vaccine this coming spring, by doing some clinical investigational work in these herds. I've had no experience with it. The thing I'd like to leave with you people tonight is to think about doing experimental work on cow-calf operations or dairy herds or whatever. Good experimental work! What I find wrong with much of the work that has been done on vaccines is that we are comparing results this year when we used the vaccine with what it was like last year. I don't think that is good enough. If we're going to push back the veterinary horizons of science and generate some vital information which is necessary to prevent some of these diseases, we are going to have to start doing—as in the case of Rheo-vac scour vaccine—blind trials. We'll have to go into herds and vaccinate every calf. I think the only way to do it is to have marked vials; the owner does not know if he is giving virus vaccine to those calves—say he had 200 calves born—100 calves get diluent, 100 calves get the virus vaccine and the owner doesn't know which one is getting the vaccine. Then you have the problem of making a diagnosis of diarrhea. What constitutes diarrhea? We've been tackling this problem about three years. We have a graduate student on it full time. What is diarrhea to me—to you—to the next man? These are real problems that we are confronted with in the field all the time. I find it very difficult to accept results based on—well, we used the vaccine this year in Montana, we used it in North Dakota, we didn't have any scours in these herds and last year we had all kinds of scours. It just is not good enough! I emphasize again that if we are ever going to push back the horizons, it is to do blind trials, double blind trials preferably.

Dr. Allenstein: We have used some of it; a lot of it in some of our herds. In two or three herds we have had no results at all. I would like to comment on just two herds where we have started using it this year. They used ten doses in both herds, both ran out. The next two calves that were born—both herds—died with an enteritis or scours or diarrhea or whatever Dr. Radostits says this is. We immediately started vaccinating again and they quit. We have had results in other herds where this didn't work at all. I do agree with Dr. Radostits. I think there has to be some controlled work done before we can actually say whether we have it or not.

Dr. Barron: I can only illustrate what Dr. Radostits said, I think, about a rather large east Texas beef herd which does not fit the picture at all. This man had had about 25% death loss from scours for several years. This year he used the vaccine and he had no loss. The clincher to that is that he had been losing them at about the age of three months previously, so this vaccine could have been absolutely inconsequential in the solution to his problem, but you would never convince him of that!

From the floor: We've had some questioning around with the other practitioners and I don't know whether it is from reading the literature put out by the company or not, but we get reports from the practitioners of about 20% success. They speak not of 20% in each herd but about 20% of the herds claim to have results. This is one thing that has been observed—either it works well for the problem or it doesn't work at all. The thing that bothers me, and I'd like to get back to Dr. Amstutz's observation, I can't see that Rheo-vacs or rheo-like virus is the sole answer. You start checking literature and you find virus plus *E.coli* necessary to reproduce this disease. *E. coli* has been a real health problem for a long time. You get into scours of baby lambs and scours of baby pigs with *E. coli.* Nobody really worries too much about a virus. I think it is pretty hard to rule out *E. coli* in this aspect, as well as the virus that we are talking about.

Question: How do you treat coliform calf scours in late winter after one antibiotic after another has been used and they've all lost their effectiveness? What measures should you take and what should you do? Will steaming kill the organisms in the premises?

Dr. Bracken: I am not aware that steaming is particularly effective. We have a real big, nice steam genny that we haven't used in about 10 years. Personally, I like formalin for disinfectant purposes. Of course, you are not going to disinfect anything if you do not have hard surfaces. If it is soil, you cannot do anything about it. I like one to two percent formalin. Anymore, I am finding that I have to qualify that a little bit with care because we have had a couple of incidents where people have used formalin for disinfection in a barn and have acquired considerable respiratory distress, so I am careful about it. I think another thing we need, regarding disinfectants, is to look more at the human field and their hospital surface disinfectants for disinfecting walls. These are based on their ability to control paratyphoid infection and organisms such as this. They are relatively cheap; they

have detergent benefit and that puts me to the last part of the pitch, and that is that I think a power sprayer with a hard surface for cleaning is very good. To get back to treatment, I think electrolytes are the most important part. I think you can take your choice of antibiotics. Maybe the thing to remember about antibiotics and *E. coli* is that it has the ability to develop tolerance. What works and is popular for three or four years in your area later fails to work. Right now fluids are the magic word. I will put one more pitch in: that, I think, is something I can not get our own livestock people to believe, or to try. I'm a real believer that when the sun comes out in April, the calf scours disappear. If they calve in April, they don't have as heavy a weight in the fall to market, but they have more calves and that puts the weight up!

Question: Who else would like to comment on colibacillosis and its control?

Dr. Shank: I have used some autogenous bacterins with *E. coli.* I had one herd where we had tremendous *E. coli* problems. We had very good success using autogenous bacterins, but as they said, your treatment with electrolytes is the answer as far as I'm concerned, with your antibiotic choice. On this herd we found that by moving them completely into another pasture we broke the chain. When I start having this trouble in dairies, I get those cows, if possible, to another area to calve and to raise those calves. If they don't have another place, you better find one or else you are not going to have any calves. You just have to break that chain.

Dr. Sexton: I go along with Jack. I think as far as treatment is concerned, it is pretty disappointing and what we should keep in mind, possibly, is to try to keep it from occurring in the first place. Take good care of the calf when it is first dropped, get some colostrum into it right now! Get that navel soaked up with some iodine and try to explain to the client that prevention is the answer, not treatment.

Question: What about the use of unapproved (by the FDA) products? Example—chloromycetin.

Dr. Sexton: We had a discussion about that today, and the responsibility and legality of using drugs that are not approved and, as I understand it, (and I'll stand corrected on this) that you have a certain privilege—if you want to use that word—with your doctor-patient relationship—that you can use what you think must be done. However, the owner must be warned as to the effect (I'm talking now of withdrawals) of any adverse reactions that might occur.

Dr. Herrick: In other words, you take the sole responsibility.

Dr. Sexton: Yes.

Dr. Hutchins: I was going to say the same thing. Again, if you treat a cow that you know is going to stay in the herd—with any reasonable luck—for another two months, meat isn't probably going to be affected and neither—if you know the milk is going to be thrown out for a good week—would the milk be. If you know the calf is going to be around, one he is going to raise, again your risk isn't too great as far as the public is concerned. In the state of Vermont, they are getting very careful about what shows up in the meat. In fact, I have about three farms now that when any animal goes out of the farm and lands up in the state slaughterhouse, it is immediately checked for antibiotics. That means that every calf that comes out of that man's barn is quarantined and checked.

Dr. Todd (FDA): You mentioned the doctor-patient relationship. Our attitude there is that the veterinarian assumes responsibility to use any drug that he can legally obtain. Now this responsibility sometimes is very difficult. None of these drugs act the same nor do their residues. Unless you understand what this residue picture is, it is very difficult for you to assume this responsibility. We know that antibiotics stay as long as four and five months. Unless you understand this picture—and you have seen the research work that has been done on it—it is very difficult for you to assume this responsibility.

Question: Who has done the research work?

Dr. Todd: Naturally, the firms that are supplying drugs are the ones that have done the research. They do that without our requesting it. You also have research done by the universities, in the academic field.

Question: Relative to drugs and drug residues, what is the responsibility of the veterinarian ethically and legally?

Dr. Todd: You mentioned this drug, chloramphenicol. I suggest that most of you pick up the PDR and take a look at what is required for use of chloramphenicol in humans. I think you will get quite a surprise!

Question: There seems to be some discrepancy with reference to top dressing with antibiotics in custom feedyards. This, I understand, is permissable and yet to mix it in the feed through the mill is not. Could you clarify that point?

Dr. Todd: No, I'm afraid my job in Food and Drug is that I'm chief of large animal branch new drugs. All I am involved with is therapeutic drugs. I am really not familiar with the part of Food and Drug that you are asking about.

From the floor: This term "chloramphenicol" has been a whipping boy for quite some time. I happen to be one of the elder veterinarians here, I guess, this evening. I was one of the first men to use this particular drug in our area for calf scours. I have many clients that owe their crop of calves and their herds today to the use of chloramphenicol in their baby calves. Now, to me, the research work that I have been able to obtain is very questionable as to who has done the research work and where it was done. I was on a hearing several years ago where this was talked about, but we couldn't get much information as to where it was done. I'd like to say it again, we're talking dollars and cents. A lot of the calves are worth $500 to $1000 the minute they hit the ground and it is a matter of either saving or not saving these calves. Now, I feel my obligation to my client—I feel that the residues of this drug are long dissipated before this animal goes to market. I can't see the harm of using this particular drug when we are saving our client's animals.

Dr. Todd: Chloramphenicol has a severe toxic reaction in humans—blood dyscrasia. Because of this toxic reaction, there's been no residue work done that I know of to tell us how long it remains in the tissues of the animals that have been fed or treated with chloramphenicol. Drug firms have not seen fit to do this because of the toxicity question.

Question: Chloramphenicol has been used extensively in Europe and I believe in Canada. I think maybe there is considerable smuggling that has gone on into this country from Canada. Do you know of tissue residue work, possibly in Europe, England or Canada regarding its use?

Dr. Radostits: The tissue residue work has been done, much of it in Saskatoon for the federal government, but they haven't released the information, I don't know why. My wild guess would be that the residue information is not very damaging, but that is a very wild guess. We use chloramphenicol extensively and rather intensively.

From the floor: I do not know the reason they have not released it either, but I have a pretty good idea. It is probably because they cannot decide at what level they would consider it safe, because the mechanism that causes this particular phenomenon of the blood dyscrasia is not known.

Dr. Herrick: The question was asked why you could topdress using a certain feed additive and you couldn't take it to the mill and have it mixed in. It would be illegal for the elevator or the mill to mix in a drug that is not approved, but you can topdress it. I think every one of you veterinarians that are in meat animal practice should have a feed compendium. They can be obtained from Miller Chemical for $30.00. They are brought up-to-date constantly. In the compendium, they have listed all the feed additives, at what levels they can be used, and those are the only ones that can go through a mill. You can not take a drug of your choice to a mill and have him mix it in. He cannot do it. It would be illegal for him.

From the floor: I think that the reason you can't do that in the yard is because you have a third party involved. In custom yards, you have animals owned by persons you've never seen. It is a third party relationship rather than a veterinarian-client relationship, such as you would have on an owner-operated situation.

Question: What is the preferred treatment for wheat poisoning in old cows?

Dr. Bracken: I wonder what they are referring to as wheat poisoning, whether it is the grain in the form of toxic powder or whether it is the green wheat in the form of grass tetany as we know it. We see grass tetany related to wheat. With this, the use of magnesium compounds works very well, both as a preventative and a treatment. As you all know, if you have a cow with magnesium problems, particularly with tetany on these types pasture, you better know where you are going to go hide before she gets up! For some of these that are convulsive, I use chloralhydrate and magnesium sulphate to relax them and also get the magnesium they need. Not enough to lay her over, but to quiet her down.

Question: Do we have a standard profile for the blood picture in the normal cow so that as we take a look at the "downer" cow and do some blood work we can determine how to treat that animal from chemical tests of the blood?

Dr. Sexton: You ask about blood profiles and blood tests. It is becoming quite commonplace now in a lot of practices to have some minimal equipment, so that you can do some simple testing. There are two things I think you would have to consider. First of all, the serum calcium, which would probably get down around the area of 6.0 mg%, indicating a possible hypocalcemia, and the other thing that I would be running simultaneously or shortly thereafter, would be an SGOT. An elevation would probably show you the "downer" cow syndrome and something beside the calcium deficiency, something that you may not be able to do a whole lot for, but you would be intelligent about what was going on.

Dr. Herrick: I think that with "downer" cows, the big problem is to get them up. If we don't know why they went down, how do we get them

up? I was wondering about this blood picture, as you've studied it, and maybe some of the other practitioners have taken a look at this.

Dr. Sexton: I can see no point in going ahead and blasting this cow with continual doses of calcium when she has adequate calcium levels. If she has levels that get up to 8 and 10mg%—I do not know why—ordinarily more calcium is going to be a whole lot of benefit. The first things we should think about are broken legs, broken pelvis, toxic mastitis and toxic metritis. I think too many times our first impulse is to get a bottle of calcium into them, which is alright, and if that doesn't work, maybe two would be adequate and if not that, maybe three!

From the floor: Well, I'll tell you about the blood work that I have done. With hypocalcemia or hypomagnesia, we usually give the cow some more magnesium and they will get up. Any cow I have ever found that was hypophosphatemia has never gotten up!

Question: What do you consider the minimum SGOT?

Dr. Noordsy: The clinical pathologists tell us that even though there isn't supposedly a normal established, they tell us that if we are in a range of 150 or below on the SGOT, we are in the normal range. On the "downer" cows, those that have muscle damage affect the SGOT; not the liver damage, but the muscle damage. This will rate over 1000 in some instances. The CPK is probably more specific for some of the muscle damage and liver damage, but we routinely run SGOT's on these cows.

Dr. Hoffsis: I think the only other electrolyte I would like to add is potassium. Low serum potassium may be significant at times in cows that are "downers." We run SGOT's generally also. You need to find out at the lab what their normals really are. In my experience, if a cow has been down for very long, regardless of the problem, it gets to the point she is going to get some pressure sores, that SGOT is going to get high, so it begins to muddy the water. I don't know that it really gives you a specific diagnosis. Any "downer," in time, is going to get an elevated SGOT.

Dr. Mackey: So far, I do not think anyone has said anything about ketones, and it seems to me that in "downer" cows in and around calving time—ketones are a factor. Another thing that I think often gets overlooked is the BUN.

Question: I'd like to invite either Dr. Curtis or Dr. Jack Cote from the Ambulatory Clinic in Guelph to relate some of their current concepts about the "downer" cow syndrome. They've looked at this very carefully in their practice over the last several years and have published some papers on it.

Dr. Curtis: I am not sure I can add much more to what has been said by the panel. Two or three comments. We have been unable to make any correlation witw potassium in these cows. We consider that the majority of these cows—something like 95% of them—are down originally because of hypocalcemia and they stay down because of muscle damage. They very quickly have elevated SGOT levels or CPK levels. Unless you nurse these cows very carefully and get them off the slippery floors, your problem is that you can not do anything with them. You have to get somewhere where you've got footing and then you can do something with them. If they are nursing, we do not treat them; we do not do anything with them once we get the hypocalcemia solved.

Question: What is your medical treatment for left displaced abomasum?

Dr. Allenstein: I'm sure that left DA's are caused by the accumulation of lactic acid in the rumen. Also, a lack of calcium in the bloodstream. Originally, I used to use Calcium IV, pumping in some magnesium hydroxide into the rumen and I think possibly 50-60% got better. But, I will have to say that in the last year and a half to two years I see more and more I'm sure are associated with this fatty cow syndrome that I didn't used to see before. I'm sure that this is an accumulative thing that comes on from the last few years and these I do not have any luck in treating. I do not have real luck even operating on them.

Question: What is the present status with regard to veterinary technicians? What can they do to aid the large animal practitioner?

Dr. Herrick: I'm sure that most of you people are aware that there are some 23 schools in the United States that in one way or another are training so-called animal technicians. At the present time the AVMA is in the process of certifying two schools. In due time, more will be certified. There is quite a demand for these technicians in some areas and in some other areas there is not. I don't know of a large animal practitioner that I've ever met in my life that didn't have lay help of one kind or another. I think one of the biggest problems most people are confronted with in most states is the Practice Act. In some states it is illegal to use an animal technician unless the Practice Act is changed. Many people don't want to open up their state Practice Acts. That is about the situation at the present time.

Dr. Hutchins: We do now have a committee on animal technicians in the AABP that met this morning and will begin to get off the ground, and I hope that within a year at least we will have something to report. Our discussion this morning was purely dialogue between the members and nothing very concrete.

Question: What progress has been made toward a national uniform method of feeder cattle identification in relation to preconditioning?

Dr. Sexton: We started this morning all over again to come up with some kind of a system whereby these cattle can be identified and frankly I'd be off the track to try to go further than that.

Dr. Herrick: I think a good many of you are aware that there is some $500,000 that has been appropriated to some states to look into the electronic technique. There is nothing on the horizon at the present time that will say that we'll have that technique as a method for identifying cattle, but it looks rather promising.

Question: Regarding preconditioning. Who wants it?

Dr. Herrick: There has been a long standing fight between the people in the State of Washington who do not raise very many calves and in Iowa where we feed a lot. We like to feed them up there and we do not like to have them die when they get there.

Question: Do your buyers want it enough to pay for it?

Dr. Herrick: I think this whole story is brought into focus right here by these two statements. If we can't as veterinarians recommend management practices that are going to make a better calf, no matter whether it is in Washington or Iowa, I think we are missing the boat. It is not a matter of who pays for them, we are losing enough calves on our feedlot to supply the youngsters in the U.S. for a year with their protein. As long as we keep on playing around with vaccines, arguing who is going to pay for it, they are going to keep on dying and piling up.

Someone from the audience: I'll disagree with you, Dr. Herrick. It is important who pays for it. Our client? Our producer? I am on both sides of that, feedlot and cow and calves, why should the cow-calf producer have to spend five or six bucks more if he does not get one dime in return?

Dr. Herrick: I think this will be resolved when it gets moving, and it is coming along quite well, doctor. We are finding more and more of these cattle are moving more direct than ever before in history. It is slow, but it is coming along.

Question: How do you treat a cow with a normal uterine tract and inactive ovaries that is not cycling?

Dr. Amstutz: I would look into the nutrition of such an animal. Attempt to find out what is going wrong in the herd. Many that I have thought were not cycling, actually were cycling. I would make absolutely sure that she is not cycling before I would say she is not. I am not above going ahead and bringing her into heat with estrogens and I don't use a great deal of fluid in the uterus as they have in mares, but I have on occasion. I have been able to bring some of them into heat with intrauterine injection.

Question: What about a fracture of the tibia?

Dr. Bracken: We get bulls and cows with fractured tibias rather routinely. We don't operate, we use a splint which we find works very well. There are a couple of limitations. The first one: Charlais have rather long legs, so it is hard to predict if they can get up after you get the splint on them. The other one: with a very fat cow you may have trouble getting her up. But if you can get them up within 24 to 48 hours they are going to get along very well. We keep the splint on for about two months and get good results. When it comes to beef bulls, the only time we advocate treatment is a herd sire in a pureblood situation.

Question: Do you feel that you are seeing more of an increase in the instance of antibiotic resistance to pasteurella organisms? You were mentioning that a moment ago.

Dr. Harris: Yes, we have seen a great deal more resistance to tetracycline particularly. Pneumonia in our area, which is the central valley in California, has really gone through quite a cycle in the past 20 years. We rarely saw pneumonia in our particular area that was contagious. Then it was gradually built up until now it is contagious, and at first we generally could handle it very well with one to two treatments of tetracycline. Now we are up to four to five treatments with tetracycline with a two week follow-up of high dosages of penicillin. If they can get this individual attention and, of course, if the scar tissue hasn't built up too severely, you can bring quite a number of them back to satisfactorily producing cows.

Question: What would be your differential diagnosis in young dairy stock 500 to 700 lbs, which cannot eat and are found with hay or straw inpacted in the back of their mouth? No ulcers or lesions are present. The animals can move their tongues and jaws, but they seem not to be able to swallow. Some of them, with good nursing, will recover.

Dr. Barron: In the cattle this question refers to, I would think of the possibility of listeriosis.

Question: What is a good treatment for salmonella infection in calves two to ten weeks of age?

Dr. Radostits: We've been using chloramphenicol rather routinely! Recently, as you would expect, we have been isolating some sterotypes from our calves with salmonellosis that are resistant to all the common antibodies with the exception of genemycin and polymysin B. In one outbreak which happened recently, we had to resort to the use of polymysin B and we had good clinical results.

Question: In Wisconsin, it is no longer necessary to test for TB or brucellosis for cows to move between farms in the state. Is this a good thing?

Dr. Allenstein: I will ignore the TB. We have not seen TB for so long. I would like to comment on brucellosis. I think it is one of the poorest laws that has been passed in a long time. We have three herds that are positive right now that have broken out with brucellosis. They are all within 15 to 20 miles of me. I do recommend vaccination and the continued use of the vaccine on these farms. I was hurt when I found out that we did not have to test, not because of the fees that I lost but because of the surveillance that we lost.