

Practitioners' Panel of Everyday Practice Problems

Herd Immunization Programs

W. M. Wass, D.V.M.
Ames, Iowa

Twenty years ago, when I was in veterinary practice, I believed very strongly in calfhood vaccination with Strain 19 against brucellosis. I still do today, but the program remains controversial. We seem to vacillate between banning its use and requiring it for all animals kept for breeding. Today we have other products available for preventing other diseases such as IBR, BVD, parainfluenza infection and more. But there still is not consistency of opinion or recommendation.

Frank Mongini, D.V.M.
Cotati, California

Well, I must say our programs do differ somewhat from that. We deal with herds in the north coast area of California, roughly on the average of 250-cow herds. Some 100-cow herds, some up to 500 and 600 cows, but they are in the minority. We are a group practice, as I mentioned last night, and this whole vaccination topic had been kicked around considerably when I first came to the practice. It was customary to booster every fresh cow with triple vaccine, IBR, BVD, and PI₃ upon freshening. I did this also, thinking it was right. So in the meantime we have seen things happen that have got us questioning this use, and also with the new diseases that have appeared, the new leptos. We have always boosted the pomona, now we have hardjo and grippityphosa that are endemic in the area. So we have altered our vaccinations program. Probably the last two years we have changed them considerably.

Starting out with calves, we give everything Strain 19 and we follow the recommendation of 2-6 months of age and we try to get them around two months if possible. We do this on our reproductive program checks; whenever we get a group of five calves we do them right at the time. All heifer calves get the clostridial vaccine and we use Electroid 7 and nothing else. They get it at the same time. If they hold off on the vaccination until around six months of age, they are not boosted with the clostridial vaccines. If we give it at two months of age, they get a booster shot when they are 6-8 months of age. Nasalgin is not given at this time. The only time we give Nasalgin to calves is when we have a respiratory problem from the herd. The age we give it determines when we see the problem. We have gone down to one week of age on calves where we have seen problems. If we do not see the respiratory problem, they do not get any of the viruses at this time.

On bulls, I deal with quite a few purebred herds, the bulls get Electroid 7 and Nasalgin and nothing else. This seems to be compatible with what some of the studs are thinking now and also in shipping to foreign countries. We are shipping a lot, as some of you are, to Germany and Japan and they have tolerated nasal vaccine as long as we get negative IBR titers and we seem to do this at the age that the bull is shipped. The bull is not boosted, he gets it as a calf and not again.

For replacement heifers, when they are yearlings, we give them their viruses and we use the most modified live viruses, the IBR, BVD and PI₃, shot at yearling age. This is the only time at present we give them BVD. As I said, we have changed because we have been seeing problems in some herds where in one herd in particular they have vaccinated probably for 15 years on a yearly booster basis. We get more unexplained abortions than we can explain. We get tremendously high BVD titers on these cows, the vaccinated cows. We never retrieve the virus. We have an endemic respiratory problem on our calves in this herd and these calves will all run IBR titers 1028 and above. Clinicians will diagnose it as a possible BVD problem. We will run this reaction until they are yearlings and then they outgrow it. So we have stopped this on this herd. This has become the pattern on all of our herds, the yearlings get it and that is the only time they get BVD. They do not get leptos until they go in with a bull or they are bred artificially and then we give them the three-way. We use the leptos GHP. Vibrio, only in herds where we have problems. When we have used vibrio on heifers, we give them the two-shot series and if we have to boost them yearly we go to a Norden one-shot. Very few herds is vibrio used on. Now, with our fresh cows our policy, again, even with our area, we do vary. The ideal program that we are running that seems to work best is a yearly booster of leptos GHP upon freshening and Nasalgin 30 days postpartum. If we have to go to the viruses they are modified live. The only reason we are doing the modified live is because the client is complaining about the method of administering the Nasalgin. We are using the two-way, IBR and PI₃ only. They get this yearly. But on all herds we boost them with the IBR and PI₃ one way. Either the intramuscular shot or the Nasalgin. I must admit my best breeding herds, herds that get leptos yearly and the viruses only when they are heifers and never again, and how I explain this, I cannot. Some herds we do not give it when they freshen, we booster them yearly. As Ben said, once a year and it rotates in our

area, depending on when the program is set up. It is not on a seasonal basis. We will give them the GHP yearly. In the hot areas where we do see a lot of leptospirosis, we seem to see breaks 6-8 months after vaccinations. We do it semi-annually, but we do not have too many of those.

Ben Harrington, D.V.M.
Raleigh, North Carolina

I think the first point I would like to make would be that an immunization program has got to fit the situation you are in. And I do not think we are ever going to have a uniform program that will fit the whole country. For example, we were one of the first states, North Carolina, to do away with Strain 19 vaccination. I have probably used less than four doses in the last eight years of Strain 19 vaccine. So you can see we are sitting on a hot seat and I am sure this will not apply to many other areas of the country. We currently have the lowest incidence of brucellosis in our state of any time we have ever had. So we realize we are on a hot seat.

Just recently we made a new regulation that any animals coming into the state will have to come in on a health paper with a negative test and will have to be re-tested in 30 days. We currently have a few purebred breeders vaccinating against Strain 19, but most of us are not. A similar situation exists as to leptospirosis. We continually test for leptospirosis and in our immediate area we have had, in the 20 years I have been practicing, only two herds that were positive to leptospirosis. Both of those herds vaccinated every six

months for a couple of years and have dropped it and we have had no other problem.

A lot of the practitioners in our immediate area think it is kind of useless to continue having blood samples for leptospirosis, but just a couple days before I came down a neighboring practitioner called up and he had an abortion problem and he had positive up to 640 titers of five different strains in one herd that had a lot of animals shipped in. So this kind of changes our thinking and, of course, we are going to continue to check, and I think it is just a matter of time before it will be in our area.

As to IBR, BVD and shipping fever or pasteurella, our program has been for several years now that all replacements for the herds we work in, replacements between 6 and 12 months of age, are given Nasalgin and BVD vaccine along with triple bacterin, which is two strains of pasteurella and blackleg and malignant edema. The milking herd and the spring heifer herd are vaccinated with a multi-strain pasteurella vaccine. No IBR, no BVD. They are vaccinated annually, usually in September and October, and we had a chance to re-evaluate this in our practice this year because of some discussion of the possibility of going back to bar four. So we decided that we were having no problems with this program, we did not have any increased incidence of pasteurella in the herds that were following this program. We feel like we were getting along good. So you can see, for sure, our vaccination program would vary from a lot of others and we were asked to give what we were doing in this area.

Prevention and Treatment of Downer Cows

W. M. Wass, D.V.M.
Ames, Iowa

I would like to make just one point about the term "downer cow." It does not constitute a diagnosis. Most of us would probably agree that the term is best used to describe a dairy cow that has recently calved and is unable to stand or walk. There are, of course, dozens of reasons for this, however, after we sort out all the problems we understand, or can identify, we are still left with a substantial number of cases that we cannot explain.

Robert J. Harris, D.V.M.
Turlock, California

I am sure that better dry cow nutrition with special emphasis on calcium/phosphorus ratio has helped reduce downer cows in our practice but increased production has increased the incidence of the milk fever syndrome on the other hand. Most of the downer cow treatment is now in the hands of the dairyman. Most of the dairies do their own treatment and many may have two or three men somewhat qualified to give I.V. injections.

The downer cow syndrome does not seem to be the

problem it was a few years ago. I think the real answer may be in the fact that all five of our veterinarians preach calcium, calcium, calcium on the fresh cows. If the cow is dull-eyed, quivering, stiff in stifle, not putting real pressure into calving, breathing with abdominal effort, slow to eat, or straining, give her calcium. High-producing herds having a problem with milk fever are encouraged to treat all cows, third calf or older, as soon as possible after calving and even before calving if any symptoms of milk fever are showing. We encourage 1/2 bottle of calcium with almost all systemic mastitis treatments. We encourage repeat calcium if animal shows any relapse symptoms. The theme is keep her on her feet. It has been helpful.

One thing I am very strong on myself is the use of calcium subcutaneously. When I treat, I almost always use one bottle intravenously and one bottle subcutaneously. I do hesitate to encourage subcutaneous treatment to any client that does not sterilize equipment between treatments.

We do use Dilusol (a potassium product) on creepers or animals that are suspicious of being creepers. It may be a help in addition to calcium treatment.

Summary

When in doubt, use calcium. This applies in our area to fresh cows, dry cows, mastitis cows, diarrhea cows, or any cow showing any symptoms of milk fever syndrome. Calcium subcutaneously gives value longer than intravenous injection. More cows are lost from lack of calcium than are lost from over-use of calcium.

Dry cows. Keep the calcium/phosphorus ratio not to exceed 2-1. Do not get cows overly fat, start grain feeding during last two weeks and try to simulate the ration cows will receive when returning to the milk string.

John Offutt, D.V.M.
Athens, Georgia

Prevention of downer cows is basically a management problem and can only be accomplished by cooperation between the veterinarian, the owner, and the feed company. Many times we still have the downer cow, even in the best of circumstances, and I will confine most of my remarks to treatment.

The most important aspect of downer cow therapy is examination of the patient. One should always ask why is this cow down? The downer should be examined with two classifications in mind. Nutritional downers (metabolic): 1. milk fever; 2. grass tetany; 3. feed toxicity; 4. starvation (excessively low TDN feed). Mechanical downers: 1. obturator; 2. fractures and dislocations; 3. torn muscles and ligaments. Also, it must be kept in mind that more than one of these conditions may occur in the same patient, i.e., milk fever with a fracture or dislocation.

The Retained Placenta

W. M. Wass, D.V.M.
Ames, Iowa

I think if there is truly an everyday practice problem it is probably the retained placenta. Yet for all of our familiarity with this condition, many of us would not agree on how best to handle it. I can remember when in north central Wisconsin we used to consider it to be a true medical emergency when we had a retained placenta that was hanging to the floor because we felt like we had to get there before it fell out. Now, I learned that a lot of people do not even bother to remove those things.

Stan Oxenreider, D.V.M.
Monroe, Wisconsin

I am familiar with the work at several universities that show there are fewer breeding problems when the uterus is not entered in cases of retained placenta (RP), however, the dairymen in our area have to slide in next to that rotten thing when they milk and they just will not tolerate the smell and the mess. We could have them inject oxytocin and Pen-Strep and cut-off the protruding mass with scissors, but once

After examination of the patient, a treatment regimen should be instituted that is based on the diagnosis. I realize that much treatment is based on intuition and your past experience in the herd, but basically, if you are confident of your diagnosis, treat for results. If you are treating for results, you must vary your treatment based on your examination of the cow. A downer cow deserves more than a standard treatment. If you treat all downers the same, then only a certain group will get up. I think many downers become "creeping" downers because vigorous therapy was not started when the cow first got down. If a cow has milk fever and it is uncomplicated, give her calcium gluconate until she gets up. I see no reason to give one bottle of calcium and then leave the cow to crawl around six or eight hours until you retreat. I have several treatment variations for milk fever that I use, based on the appearance of the cow and whether it is her first time down or she has relapsed. These are: 1. calcium gluconate-simple milk fever; 2. calcium gluconate and Dilusol-alert downer; 3. calcium gluconate and Dilusol and Azium and Recovr-for the slow-responding cow; 4. Intragel and calcium gluconate and Azium and Recovr-the relapsed cow.

Again, let me say, treat each downer cow as an individual. Vary your treatments until you find what works in your area and you will be surprised how many cows will get up if you work at it. In my practice, a Jersey herd would lose one to five cows a year until I discovered that treatment should be varied according to symptoms presented. At the present we have not lost a downer in five years.

many of our clients have given what they call "common-botic" they believe they have treated any ailment the cow may have and the opportunity for us to treat a sick, fresh cow might be delayed too long for us to help her.

We are careful to avoid trauma in removing the membranes and do not force them if they fail to peel out easily. We clean the perineum thoroughly and medicate the uterus with polyotic powder in gelatin capsules. We conduct a complete physical examination on RP cows that are febrile, anorectic or otherwise appear abnormal. If the membranes do not separate from the uterus we medicate the uterus and cut off the membranes that protrude beyond the vulva. This is important to prevent wick action that can draw gutter fluid into the uterus when the cow lies down. We will again attempt to clean the cow in two days if a large amount of membranes are left in the uterus.

We believe that many RP's can be prevented by keeping calving as natural as possible and holding stress to a minimum at this time. Healthy beef cows calving on clean pasture in good weather do not retain their placentas. Contrast this to a dairy cow dropping

her calf in the gutter where she is prevented from obeying the natural urge to clean off her calf and urge it to nurse. Therefore, we strive to convince the dairyman to provide either a clean, dry, well-bedded box stall or a shady, dry pasture for the cow to calve in.

We also see fewer RP's in herds fed a balanced ration, but I am not sure what components of the ration are the most important. I will keep an open mind to the effects of selenium, but have to see more trials conducted to be convinced that protein and vitamin A are not more important than selenium.

Walter B. Lukens, D.V.M.
Amenia, New York

The retained placenta, being such a common problem, is sometimes treated with disdain. The uterus is surprisingly resistant to infection and frequently cures itself in spite of, rather than because of our ministrations. There are no absolute preventive measures that I am aware of; however, over the years it has become apparent to me that where general herd health is high and good sanitation is practiced, the retained placentas are not a herd problem; but where other health problems are prevalent and the cattle are housed under substandard conditions, the incidence of the retained placenta is very high.

A few procedures I find helpful include herd immunization against leptospirosis, IBR, PI3, and BVD. Sometimes vibriosis may be included. The calves should be immunized against *Brucella abortus* using only a small dose of strain 19 vaccine per calf. I use 1 to 1-1/2 cc and find it very effective. In herds where retained placenta has always been a problem, try giving 5 cc of Vitamin AD and 5 cc BOSE about 3 weeks prior to calving. Naturally, the cows should be calved in clean box stalls or in mild weather in a small clean pasture. Sanitation at calving cannot be overstressed, but may be the most difficult to provide.

In my practice area more and more of the herdsmen have taken over much treatment formerly reserved for veterinarians. In the herds with competent per-

sonnel, if a cow retains her placenta beyond 12 hours, a 2 cc dose of POP is given intramuscularly and one or two one-ounce gelatin capsules filled with soluble tetracycline powder are placed in the uterus using a clean, disposable plastic sleeve. If in 24 hours the placenta is not expelled, more capsules are inserted into the uterus. If still intact at 72 hours, I am called to attempt removal. This procedure has been most effective in my practice. If I can remove the placenta, I again insert several one-ounce gelatin capsules packed with tetracycline into the uterus and give 5 to 7 cc of Ergonovine Maleate. Even if I cannot remove the placenta, I follow the same procedure. I do not like the ready-made uterine boluses as I feel the ingredients used as binders to form a bolus may not be well tolerated and produce problems. Research may prove me right or wrong.

If a great deal of fluid remains in the uterus following removal, I find it best to siphon this off with a stomach tube. Then the drugs used to stimulate uterine contractions will find less resistance. In the occasional cow that develops pyometra, an infusion consisting of 50 cc Furacin solution and 20 mg of Estradiol will be most helpful in emptying the uterus. Use this a few weeks after calving.

I am never afraid to tell my clients that the placenta cannot be removed. Large doses of tetracycline powder locally and a few days' time can produce wonderful changes making the removal quite easy for both you and the cow.

It should not be necessary to mention this, but cleanliness in this messy job is important. The cow's tail should be held out of the way or tied to a front leg and the perineal area should be washed with soap, water and a disinfectant. I rarely find a spinal anesthetic necessary, but rather than subject the cow to injury through excessive straining, it might be occasionally used. A clean obstetrical sleeve-plastic or rubber—is a "must" along with a glove on the opposite hand.

I believe this condition should be handled in the same manner and with as much care as one would use in minor surgery.

Examination and Treatment for Abomasal Diseases

Darrel E. Johnson, D.V.M.
Weyauwega, Wisconsin

Any discussion of abomasal problems in dairy practice stimulates more questions than answers for me. We are gradually learning to properly evaluate the signs that indicate abomasal dysfunction. Along with the careful, thorough physical examination that has long been the forte of the bovine practitioner we find a use for clinical chemistry more often in evaluating disease problems involving the abomasum. Nevertheless, in the field we are applying more the art of veterinary medicine than the science of it.

As practitioners our clinical experience with abomasums might be divided into 1) LDA's; 2)

RDA's, dilatations and/or torsions; 3) abomasitis and ulceration; and 4) abomasal impaction involving atony, vagal indigestion, pyloric obstruction, or lymphoma. We will not consider the effect of internal parasites involving the abomasum.

Considering the *left displacement of the abomasum* (LDA) first, I think we all are familiar with the common signs in the diagnosis. Our surgical approach depends on how the individual case presents itself. If it appears uncomplicated we routinely approach from the right paralumbar fossa. If adhesions or an ulcer are suspected as a complication we use the ventral approach with the cow in dorsal recumbency. This allows us better access to the

area to separate adhesions or repair a perforating ulcer. I have on one occasion removed a piece of wire from between the reticulum and diaphragm in a concurrent traumatic reticulitis. I have also successfully repaired a concurrent perforated ulcer using the ventral approach. I do not do the "blind stitch" or "roll and tack" although I can understand the temptation when one is busy.

In attempting a medical or nonsurgical approach to correcting an LDA we use both parenteral and oral treatment. Parenterally we give a combination of dextrose, electrolytes and amino acids IV (IV 1830 - Osborne); a parasympathomimetic SQ (Stiglynil: 500 - Pitman-Moore) and Selenium - Tocopherol IM (Mu-Se: Burns - Biotic). Orally we administer electrolyte boluses (Polysal - Cutter) and have the farmer follow-up with 8 oz. propylene glycol daily.

If the cow does not become or remain responsive, surgery is indicated. Of course, concurrent metritis, etc., are dealt with as indicated. Our recovery rate with this medical treatment approach is about 1 in 6. These usually reoccur following the next calving.

In some herds nonsurgical treatment of LDA's is fairly successful and a valid approach while in other herds we no longer attempt it and elect surgery when the diagnosis is made. I have ascertained no common denominator to explain this. Blood chemistry on LDA's cannot give diagnostic results except blood chlorides are always low with an LDA, I am told. Clinical chemistry can give indication of concurrent fatty liver problems.

Right sided dilatation (RDA), displacement and torsion, besides being common in the postpartum cow, I understand, is the most common abomasal problem in bulls, steers, beef cattle and pregnant cows. This right sided involvement is almost always accompanied by some degree of torsion and the signs will vary with the degree of torsion and subsequent impairment of blood flow to the organ. A 90° torsion will give about the same signs as an LDA, but a 180° torsion results in critical signs of abdominal pain, dehydration, complete anorexia and scant tarry feces, if any. These RDA's can frequently be palpated per rectum except in advanced pregnancies and usually a ping can be elicited on the right side.

We have a good percentage of success in nonsurgical treatment of right dilatations and torsions and will invariably attempt to do so. Our parenteral treatment will include dextrose, electrolytes, and amino acids IV; stiglyl or dipyrone SQ for direct action on smooth muscle depending on signs and B complex vitamins IM.

Orally we pump in electrolytes and detoxicants in water and top off with a gallon of mineral oil. I think mineral oil is very effective in the treatment of abomasal dilatation and inflammations; at times it appears to be the drug of choice. If showing signs of toxemia and fetid feces I also give a massive dose of penicillin (15 million units) IM. These cows are reexamined in 12-24 hours depending on circumstances and if dilatation persists we elect surgery.

I prefer a ventral approach for surgical correction of RDA's - again because it allows better access to evaluate the abomasum and I am better prepared for any complications. Those in advanced pregnancy would be performed on the right flank and standing. I use Diquel (Jen-Sal) to tranquilize all cows in which the ventral approach is used. The dose is 0.5mg/lb. IV for a mature Holstein. We apparently retain sphincter control with this product as I have not had a regurgitation in 10 years of use. Follow-up is more critical on RDA surgery as vascular damage from the torsion usually occurs to some degree. Oral and/or IV electrolytes or mineral oil may be indicated plus IM B vitamins and antibiotics.

Abomasitis and ulceration: We see these most in post partum cows that have spent the dry period in free housing consuming haylage and/or cornlage—they receive no long stem hay and little or no supplements. They are brought in to the milking line a day or two prior to calving at best, receive a generous portion of grain and proceed to calve and the abomasum rebels within the first 10 days postpartum. Both fresh heifers and mature cows are fair game under these circumstances. The first thing we do with these cows is offer them only long stem hay to regain the roughage factor and stimulate more salivation. Ruminal acidosis is often involved here. I initiate oral therapy with 1 lb. carmilax (Norden) in a couple of gallons of water and topped off with a gallon of mineral oil. Dextrose and electrolytes are given IV; B complex vitamins and a 15 million unit dose of penicillin IM. Therapy is continued as indicated until feces appear normal. Fortunately these cows will eat long stem forage very readily, as if they know they need it.

Abomasal atony, vagal indigestion and/or impaction: We see these primarily in the dry cow and under any number of management situations. My associates and I feel they are most commonly sequelae of traumatic reticulitis in the dry cow. Perhaps 75% of the hardware cases we diagnose in the 8th and 9th month of pregnancy develop some stasis which we think involves the abomasum. As a result we advise the farmer to closely watch the amount of feces passed in dry cows showing signs of hardware disease. Our medical approach is oral laxatives, electrolytes, and mineral oil; parenteral treatment is IV dextrose and electrolytes if ketonuria develops and B complex vitamins and selenium - tocopherol IM. Injectable laxatives (Laxotol - Haver-Lockhart) are also used occasionally. We feel we have about 3 - 4 days to work with the atony-impaction. If unsuccessful in normalizing the GI tract in that time and we judge we have hardware disease under control we make a choice between aborting the cow, home slaughter for salvage or surgery. In most instances we abort the cow with 40 mg. dexamethazone IM if within 3 weeks of calving. This has been very successful for us in relieving the impaction and/or atony. Don't ask me why! Since development of the AGID leukemia test, we submit a blood sample at the onset of treatment as we

have found abomasal lymphomas in these circumstances. A positive blood test would not be diagnostic, but it would influence our choices if the cow is unresponsive to treatment.

My clinical opinion is that most of these abomasal problems are metabolic in nature and the keys lie in understanding the influence and availability of the macrominerals and micronutrients at the cellular enzyme level during various stress periods in the life of the cow. In evaluating the conditions leading up to abomasal dysfunction I think we need a "holistic" view that encompasses soil fertility, forage quality, roughage factors, and supplements fed, and water quality in the individual management unit.

In discussing prevention in herds in which the incidence of abomasal displacement is high we discuss length of cut for the ensiled haylage and cornlage. We tell them to nail the chopper screens to the wall of some shed and leave it there. I used to tell them - "Leave the cut as long as you can and not have trouble with the silo unloader handling it." Now with better unloaders I tell them that empirically "as long as it doesn't wind on the beaters of the unloading rack it's not too long." Good distributors in the ensiling process are essential or good compaction may not occur. We invariably recommend 5 lbs. long stem hay daily per cow in haylage-cornlage bunk feeding systems. We always run an elemental analysis of forages in these problem herds also. Supplemental potassium has been indicated in some herds and we think we see a reduced incidence of DA's. We are also developing a clinical view that the relationship of selenium to other micronutrients in the bovine animal needs scrutiny at the research level.

Stan Oxenreider, D.V.M.
Monroe, Wisconsin

The physical form of the ration is definitely a factor in causing displaced abomasum (DA) in our area. Herds where large amounts of long-stem dry hay is consumed by the cows have a minimum of digestive tract problems. In contrast, the greatest incidence of displaced abomasum is in those herds that are fed liberal amounts of grain, especially high moisture corn, and the cows have free-choice haylage and corn silage. Problem herds can be controlled if the cows will eat one pound of long-stem dry hay per hundred lbs. body weight but it can be a problem getting them

to consume this much when they have free access to excellent quality haylage and corn silage.

We diagnose DA's by auscultation and percussion. History, rectal palpation and testing for ketosis often helps when the percussion pings are not characteristic. Other problems that must be considered in a differential diagnosis are cecal torsion or dilatation, atony of the rumen, intussusception and volvulus. We have also found torsion of the omasum after laparotomy.

We like to delay surgery one day in all but very valuable cows. This allows us to plan our surgeries so they do not interfere unduly with the schedule of a busy five-man practice. It also allows the farmer to make up his mind whether or not he wants us to operate. More importantly it allows us to attempt medical treatment which is about 15-20% successful initially. We do not have recorded data, but it is my impression that over half of these do not recur. We use magnesium hydroxide and rumen stimulants orally and cascara sagrada and lentin parenterally. Then we have the herdsman force the cow to exercise either by driving her over hills in good weather or giving her a truck ride if she is not extremely valuable.

We prefer the right paralumbar flank laparotomy for surgery. One veterinarian and one layman is all that is required and I have operated with no help at all. The operator has manual access to all and visual access to many abdominal viscera through this approach. Left DA's, right DA's, cecal torsions, abomasal torsions and intestinal surgeries can be done by this approach. The incision stays clean and dry postoperatively. We do omentopexy anytime the abomasum or omasum is involved. Postoperatively, we put the cow on all the long-stem dry hay she will eat to keep the rumen distended and gradually increase grain to correct secondary ketosis. After two weeks the corn silage and haylage is increased gradually before they are let out to eat at the silo bunk.

In old cows, poor surgical risks or whenever the owner does not want the expense of left-displaced abomasum surgery we give him the option of rolling the cow and inserting a large blind suture through the body wall and abomasum. We have had good success with this procedure in obvious left DA's that were good surgical risks.

Controlling and Treating Mastitis

Darrel E. Johnson, D.V.M.
Weyauwega, Wisconsin

The National Mastitis Council recognizes two forms of mastitis control: 1) etiologic—the purpose to stop new infection from occurring; and 2) symptomatic—the purpose to stop existing infection from causing further damage. In this limited period I will consider coliform mastitis within this context.

Coliform mastitis is largely a management-induced

disease—the result of creating an udder capable of producing a very large volume of milk secretion and then not finding a better place to suspend it than between the hind legs and simultaneously crowding the beast into even more confined space.

The best way to deal with coliform mastitis is reduce the potential for infecting the udder. The first two places I look in seeking prevention is where and in what the cow is laying those teats and how the udder

is prepared for milking. Anytime a situation develops where the cows have to eat, void, and lay in the same general area we can expect coliform problems in herds producing 13,000 lbs. or more milk per cow annually. It seems they can wade through almost anything and not have serious coliform problems in herds with average production at 12,000 lbs. or less per cow—speaking of Holsteins now.

We are all aware of the problems associated with green sawdust and *Klebsiella sp.* We have, however, experienced the same problems with cornstalks piled up moist to be used as bedding and also with uneaten haylage thrown carelessly from manger to gutter in stanchion barns and allowed to accumulate on the stall platform. So I think we can say we can incubate coliform-type organisms—notably *klebsiella* in any moist decaying sawdust forage or bedding material where ambient temperature allows incubation. Also we can incubate notably *E. coli* in any mixture of manure and mud at warm temperatures.

For udder preparation at milking we want a procedure where the udder is sufficiently dried following sanitary preparation and massage so no wetness appears at the junction of the teat and rubber at the mouth of the inflation during milking. Parlors with spray equipment are particularly vulnerable to this management error and anytime personnel changes, this must be watched. Proper function of milking equipment is also basic to prevention and reducing flooding in the stem of the inflation is one of the most important factors—to prevent reverse jetting.

Consideration of the teat ends of individual cows is important in preventing coliform mastitis—easy milking, high producing cows with relaxed or damaged teat sphincters are most susceptible to coliform infection in well-managed herds. These teat ends do not seal well and often leak a little during the day, allowing ready access to coliform invasion—teat dipping will not bail us out on this one. In extremely hot, wet weather we have to apply special handling to such cows as they will also look for some cooling slop to lie in and they are the first to become infected. We like to have two cow lots if they exercise on dirt in the summer. These can be interchanged and should be well drained and located so most of it can be exposed to the effects of sunlight a better part of the day. Cement lots should be scraped as often as necessary to prevent any accumulation and again located so the summer sun can work its wonders in drying out the surface. I like my clients to differentiate between “clean manure” and “dirty manure.” Clean manure is that which is allowed to accumulate in the living area of the cow no more than 24 hours. Dirty manure is that accumulating longer and inherent to dirty manure are three management problems: 1) fly propagation, which carry coliforms to teat ends and just plain harass the cow; 2) bacterial incubation of tremendous numbers of coliforms and 3) the hatching of infective larvae of stomach worms.

In the treatment of coliform types of mastitis we need to concern ourselves primarily with the en-

dotoxins released which cause the severe systemic toxemia we are all familiar with. It seems to be a natural compulsion to seek a special antibiotic or combination of antibiotics to quickly reverse the severe illness that accompanies many coliform mastitis cases. To a point this is justified. However, I think experience and an understanding of the pathogenesis of the infection should lead us to dealing with the toxemia as somewhat of a separate clinical entity—prevent it if caught early or minimize its devastating effects if present. We approach the coliform infection in the udder as a routine mastitis infection—with one important emphasis—we strip, strip, strip, using oxytocin periodically to facilitate complete evacuation of the quarter. In this way we seek to prevent further absorption of bacterial endotoxins. These infected quarters are usually infused with a suitable antibacterial product overnight and stripped frequently during the day if possible. Periodic sensitivity testing of infections within a management unit is indicated in light of the different strains of *E. coli* and the resistance factors. Intravenous antibiotics are administered as indicated and the remainder of our treatment is directed at preventing and/or containing the toxic effects of the infectious process. We use the presence of a diarrhea or dark mucoid feces along with apparent weakness and depression as the main criteria for the degree of toxemia we are dealing with in cows infected well into lactation. We routinely give calicum, other electrolytes and dextrose IV along with a broad spectrum antibiotic on initial treatment. If open or bred less than 60 days, we also administer 40 to 100 mg dexamethazone IV, depending on circumstances. Antihistamines and/or B complex vitamins are injected IM. Of course oxytocin is used to evacuate the affected quarters. Oral treatment is initiated early to keep the GI tract as functional as possible. We may give electrolyte boluses (Polysal - Cutter) or pump in several gallons of water containing electrolytes. The amount of water consumed in the ensuing 12 hours will determine if more fluids are administered orally and/or intravenously.

If the cow is down we immediately make plans to get her off the concrete, out of the stanchion or free stall and onto dirt, sod or into a pen with snow fence strips laid on the cement floor to hold a thick pad of fresh bedding. It is usually a good idea to infuse any uninfected quarters on postpartum toxemias with a suitable antibiotic and strip them frequently also as any additional infection means additional endotoxin. We have recently been using aspirin orally on coliform toxemias—I understand it is supposed to have some effect in keeping the neutrophils from succumbing to toxic effects and does something to the detrimental prostaglandins, and thereby allows some additional defense against the organism. Perhaps someone here can comment on the pharmacological efficacy or on the actual clinical value.

Coliform toxemias occurring at calving along with milk fever can pose a special problem as the cir-

culating hormones associated with calving pretty well prevent an adequate humoral response in defense. Fluid therapy is very important at this time and judicious use of antibiotics along with the "strip! strip! strip!"

Autogenous bacterins and hyper-immune serum have been used successfully in some areas to alleviate the severity of the infection, especially in herds of 200-plus cows. In our smaller Wisconsin herds, this is not a common practice.

Cows freshening in pens should have the calves removed unless the pen is kept very clean. If manure is allowed to accumulate and the calf stimulates milk "let down" several times daily, large-uddered cows

become very susceptible to coliform mastitis.

Much of our responsibility as practitioners is getting these cows back into production after the toxemia is under control and the infection is localized. Normalizing the GI tract is paramount here and B complex vitamins and amino acid-electrolyte preparations IV and orally are indicated. We have used Levamisole in small doses as recommended as an immunogenic, but I am not prepared to comment on its effectiveness in this regard.

Many of these coliform-infected quarters will return to near normal production the following lactation if properly cared for following an acute infection. Subsequent dry cow therapy is assumed.

How to Handle Scours and Pneumonia Problems in Calves

W. M. Wass, D.V.M.
Ames, Iowa

No doubt, the problems of scours and pneumonia go together. Both of these are management problems. In central Iowa we do not have calf nurseries where calves are pooled from a variety of sources, as we see in other parts of the country. I think most of our calves get colostrum, at least in our immediate practice area. In our local dairies at the present time we seem to be having more problems with pneumonia than we do with scours.

Riley Shuller, D.V.M.
South Carolina

My practice is mostly herd health work. We deal with 130- to 150-cow herds. I am mostly in a consultant capacity and my message on this topic is concerning facilities and pneumonia.

Many dairymen still have not learned the importance of proper facilities for rearing baby calves. They continue to use drafty, poorly ventilated barns. Now we have commercial people running around selling these little slatted calf-rearing pens and therefore we now have calves being raised in chilled, over-crowded and ammonia-filled barns. Combine this with a poor quality milk replacer and we probably have more scours and pneumonia than we did 10 years ago.

Proper ventilation, I think, is very important toward solving these respiratory problems. When you can go into a little calf barn or whatever kind of facility you have and you can detect ammonia, he has poor ventilation. He can also have too much ventilation and these calves become chilled and there is this sort of problem. Really, on the pneumonia part of it facility-wise, establish adequate ventilation and try to keep down these drafts. On scours I am almost totally against milk replacers. We push whole milk very strongly. We can solve a lot of calf scour problems with whole milk. Even though it is more expensive, in the long run when you can raise more heifer calves, it is cheaper.

Pasteurella has been more of a problem in our prac-

tice the last few years than the viruses have. I think this came about with the advent of the viral vaccines. We seem to forget about pasteurella. In handling pasteurella in baby calves, if we diagnose it in a bunch of sick calves, we would like to start using a commercial pasteurella bacterin. We will start them off at birth, repeat the dose every two weeks until they are about two months old. We also like to get started at this time on a dry cow vaccination program using pasteurella. Treatment of pasteurella has been fairly successful using ampicillin and sulpha drugs. If the duration has been long enough to create lung abscesses, then recovery will be poor. Virus problems or viral pneumonia problems can be controlled with a good dry cow vaccination program, plus we also use a Nasalgen IP occasionally at birth and then two months later.

John Offutt, D.V.M.
Athens, Georgia

Prevention is much more important than treatment in our dairy calves. If you wait for the calf to get sick before you institute any control of pneumonia and scours, you are too late. Many of the viruses and bacteria that cause our scours cause a death rate that is not acceptable, even with the most vigorous treatment.

Prevention begins with a laboratory diagnosis and continued surveillance of the calves. If calves are dying you should be posting calves and sending tissues to the diagnostic laboratory. We usually ask the owner to hold two or three bull calves with the heifers and do not treat the bulls. When the bulls show severe symptoms we prefer to euthanize them at our clinic and collect samples under optimum conditions. By using these bulls the owner does not have to sacrifice heifers and diagnosis is not complicated by all the treatments a heifer may have had.

After a diagnosis has been made, institute a program of prevention. The real backbone of prevention programs is the immune cow that will pass immunity through the colostrum. We have found that nothing works on IBR and BVD as well as a good im-

mune cow. Vaccination of day-old calves for these viruses is not effective, but vaccination of the cow at drying-off will eliminate the problem. I realize there is no support for the use of IBR, BVD, PI₃ parenteral live-virus vaccine in the pregnant cow, but we have vaccinated several thousand cows in problem situations and have never had the first reported abortion. I do not think these vaccines should be used unless you have a definite diagnosis.

We use reo-corona vaccine in herds where a problem exists and also salmonella vaccine if it is a problem. I think that if salmonella is a problem it should be typed and, if necessary, an autogenous vaccine made. The only other vaccine we use is pasteurized vaccine. After some years of being over-sold on the virus problems, we are back to using pasteurized vaccine wholesale. We give it to all the calves repeatedly when we have a respiratory problem.

G. R. Mitchell, D.V.M.
Tulare, California

In our area (San Joaquin Valley of California) dairies for the most part vary in size from about 300-1,500 cows. This means there should be about 20-125 calves born per month, which figures out to between one and approximately four born every day. At this rate, it does not take very long to accumulate a large number of calves and a lot of problems both from health and the labor standpoint if the entire calf program is not organized and managed well.

The secret of handling scours and pneumonia problems in our area is to prevent them, or at least minimize them through sound, common-sense animal husbandry and only secondarily with the

magic of biologicals, pharmaceuticals, etc.

It is with this philosophy in mind that we approach the problems our clients have with pneumo-enteritis in their young calves. Generally our progress is an inch-by-inch deal and some times even slower. In my experience, it is pretty much an education process that has to be repeated over and over again with the owner or herdsman. I also find it necessary to motivate the labor force in actual contact with the animals. It is not uncommon to have almost miraculous reversals in health conditions with a simple change in personnel or with a change in attitude of the existing men in the operation.

The success of any calf health management system depends on the strength of each phase of the system and our ability to communicate and be understood by the people responsible for the day-to-day calf management routine. The system we emphasize basically starts before the calf is born and continues until the animal is a replacement or is sold. This would include the following general phases of a calf-raising program: 1. Cow vaccinations—to develop or boost antibodies in colostrum at time of birth. 2. Management at birth—colostrum, iodine, sanitation, etc. 3. Housing management for calving. 4. Housing management for calves on milk. 5. Group pen management for weaned calves. 6. Treatment program.

In summary, we have found in our practice the only real success attainable by a veterinarian handling scours and pneumonia in young calves lies basically in husbandry and management and any attempt to depend on some wonder drug to solve a problem will ultimately yield ungratifying results.

The Repeat Breeder: Diagnosis and Treatment

W. M. Wass, D.V.M.
Ames, Iowa

We define this problem as the apparently-normal cow that has been inseminated three consecutive times on a regular heat cycle and remains open. The approach can vary from something as simple as double insemination 24 hours apart to as complex as endometrial biopsy and flushing of oviducts. In spite of progress and better understanding of this problem, however, we still lack good examination procedures or therapy in most instances, in my opinion.

Stan Oxenreider, D.V.M.
Monroe, Wisconsin

Most repeat breeding problems in our area of southern Wisconsin are caused by poor timing of service. One cause of this is inadequate observation for signs of estrus. It is cold in the winter so the cows are out for a short time and are busy eating all they can from the silo bunks. In the spring and autumn the farmers are busy planting and harvesting crops. Con-

vincing the herd owner that specific times should be set aside for observing the herd for estrus is one of the most difficult tasks we as veterinary practitioners have, but it can help prevent repeat breeding more than anything else we can do. Another reason for poor timing of service is the long routes traveled by A.I. technicians in our area. Most do not have time to visit a certain area more than once a day.

Thorough examination of the reproductive tract by rectal palpation is of prime importance in diagnosing infertility in individual cows. Obvious problems such as cystic ovaries, endometritis, adhesions and pneumovagina can be eliminated by palpation. Gross anatomical abnormalities can be detected and stage of the estrous cycle can be estimated. Examination by vaginal speculum is useful to diagnose double cervixes, cervicitis and abnormal discharge. Cervical cultures can be taken at this time.

A good history serology and blood chemistry are important, especially for herd problems. The mating

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system used, when cows are bred in relation to standing heat and the nutritional status of the herd play a role in breeding success.

Next to improving estrus detection, the most important thing we can do to increase fertility is to establish a regular monthly schedule of visiting a herd and examining cows for early genital pathology and estimating stages of the estrous cycle.

I would recommend the article by deKruif that is summarized in the Nov. 1976 *Bovine Practitioner* for a survey of repeat breeders in the Netherlands. I believe the situation would be similar in this country. He found that delayed ovulation and bacterial infections were seldom found in repeat breeder cows. We concur with this, however, we do infuse repeat breeder cows the day following breeding in herds not on a regular monthly program just so we can have a chance to examine them. Dr. Hansel of Cornell has shown rather conclusively that injecting HCG or progesterone during estrus is not beneficial and perhaps even detrimental to fertility, so if our clients insist on hormone injections we use HCG on day 4 of the cycle. This will increase the weight of luteal tissue and perhaps help in pregnancy maintenance.

Marking the tail head with crayon, using heat detector tapes and preparing heat check animals are useful when the cows are out of the stanchion for long periods of time such as in parlor herds and during the summer months in stanchioned herds. If we find management errors or nutritional deficiencies we, of course, try to correct them; but if all else fails, turning in a bull will generally cure a herd repeat breeding problem.

Culling a poor producer will eliminate an individual repeat breeder problem, but the 20,000 lb. a year cow that will not conceive continues to cause us headaches. According to deKruif's article, most clinically normal repeat breeders will settle eventually, but some were found to have microscopic abnormalities at slaughter. Double insemination and unlimited access to a bull during estrus are tried before we give up on a repeat breeder.

Walter B. Lukens, D.V.M.
Amenia, New York

Intrauterine infusion with some simple or exotic mixture 24 to 48 hours following insemination does occasionally seem to solve the problem of the repeat breeder; however, I find this to be true in only 50% or less of the cases. The repeat breeder is a very complex problem and should be broken down into many different etiological factors. A careful rectal examination of the entire genital tract is essential along with very careful questioning. Not only are we testing our diagnostic skills, but also our ability as a detective. Many factors other than infection can produce the repeat breeder.

1. Probably endometritis produced by bacteria, virus, fungus, mold or yeast infections do cause most of the typical repeat breeder problems. We all have favorite infusions—I have several: 500 mg soluble

tetracycline in 50 cc H₂O, 50 cc 3% Lugols solution, 2 cc Tylan 200, 3 cc aqueous Pen-Strep in 50 cc H₂O, 50 cc Nitrofurazin solution or a 500 cc uterine douche using a 10% Chlorox solution. Herd immunization against leptospirosis, IBR, PI3, BVD, and vibriosis can greatly reduce some breeding problems. Don't overlook BVD!

2. Hormonal imbalance is another major factor and quite complex in itself. In practice one can only guess as to the amount and type of hormone that may be needed. Actual estrus may be very short or very long, the intervals between estrus may vary considerably or may be normal, the animal may show a mucous discharge several days prior to and/or after estrus and even between estrus. Ovulation may or may not be delayed. How can a practitioner by manual dexterity, with some knowledge of the hormone balance determine at that moment of examination exactly what is the correct therapy? For the animal that has not ovulated, the use of Vetrophin, Follutein, PLH or HCG with another insemination in 12 to 24 hours is most helpful. The dosage varies greatly and depends on the individual case. Occasionally the cow showing a long estrus only requires to be bred several times during that estrus with no hormone therapy. I do believe that breeding last in estrus increases the conception rate. Examination of cattle showing long estrus a week to 10 days following estrus may reveal a luteal cyst. These respond quite well to PLH, Follutein or Vetrophin. Hormone therapy can prove to be highly effective and it can also be very frustrating. I have no hard and fast rules that have always helped me. A sound knowledge of the hormonal interrelationships is of prime importance in solving these cases.

3. The cervix is frequently overlooked as a cause of infertility. Many times it may be irritated by rough insemination techniques, producing an induration and subsequent infection that spreads into the uterus preventing conception. Damage following dystocias or even normal calvings may leave the cervix in an enlarged and infected condition. Occasionally a cervix may be twisted or there may even be a double cervix. Don't overlook the cervix in your examination. My treatment for an enlarged and infected cervix is old and quite simple. I swab the cervix with a solution consisting of 1 part strong iodine, 1 part 5% phenol and 4 parts glycerin using a straight 18" stainless steel sponge holder with a 4 x 4 gauze pad soaked in this solution and pushed through a vaginal speculum to the cervix. Swab the cervix well for several minutes. This produces a mild chemical curettage and works quite well for me.

4. The quality of the semen is also overlooked as a cause of the repeat breeder. You have all heard of the bull whose semen has gradually increased in value over the years until now it is selling for several hundred dollars an ampule. Joe may have 500 ampules, he sells 250 to Art, who sells 100 to Henry who sells 50 to Bill and so on. Remember, each time the ampules are sold the temperature of the ampule is raised as

the numbers are checked and then the temperature is dropped suddenly as the ampules are transferred to the new nitrogen tank. Each time the semen is shocked. Each time the semen becomes more valuable, but is it still of high quality? How fertile is this semen? Granted the semen may show some motile sperm, but also a few dead ones. This problem, along with the careless handling of semen, improper thawing and sloppy AI technique all add to the complexity of our diagnosis. Don't always blame the cow, it may be the semen or the AI technique or poor management. Allow me to give you two quick examples that took me sometime to discover. No. 1) A large Angus herd had a very low conception rate. The cows seemed normal, normal heat cycles, good herd immunization program, everything seemed in order with the exception of a very poor conception rate. By accident after several years of blaming poor semen, I discovered that the herdsman was checking his pastures early in the morning, then going to the office and taking out the number of ampules of semen needed to breed the cows in heat. These were placed in a container of ice water, he then proceeded back to the pastures, caught the individual cows and bred them. Sometimes the

last one was bred at 2 or 3 in the afternoon with semen setting in ice water since 7:30 a.m. No. 2) This one is even worse. A new inexperienced manager was hired by an absentee owner for a modest-sized Holstein herd. Suddenly the conception rate dropped to nearly zero. The cows appeared normal, heat cycles absolutely normal, good herd immunization program, etc. Finally a hired man saw me downtown one day and told me the problem. The new manager, very inexperienced, understood that cows should be bred 60 days after calving so that at 60 days he placed a breeder's tag over that cow and called the AI technician and every 21 days thereafter. Surprisingly, one or two cows did conceive!

We have no single answer for the repeat breeder problem, but I do believe we must use all of our faculties of observation. Not just a physical examination, but note the whole picture—herd health program, source of semen, herd management, AI technique, even nutrition sometimes. Careful attention to all of these details as well as careful examinations of the genital tracts may help you solve a few of these cases.

Employment of Veterinary Technicians

W. M. Wass, D.V.M.
Ames, Iowa

Most of our busy veterinary practices have always employed some form of technical help. What is different today is that we now have formal training programs available for veterinary technicians. The last time I checked, the AVMA had certified 26 schools or programs and more are under consideration. The attitude of the profession has been mixed and so has been the opportunities for the graduates of many of these schools. All of us are learning as this matter develops, but it would appear that formally-trained technicians are here to stay and will play an increasing role in the profession.

G. R. Mitchell, D.V.M.
Tulare, California

Formally trained veterinary technicians may be here to stay, but probably only in certain areas and situations that exist in our profession. I probably should not be talking about veterinary technicians in the first place, since we do not use them and have no intention of using them in the foreseeable future.

We have an office that consists of a private office, conference room, laboratory devoted mostly to mastitis work, storage, garage to restock our trucks, one secretary who answers the phone and does the books, orders, etc., and two students for part-time work. We have no clinic and 99% of our work is done on the dairy. Most of our dairies have personnel capable of administering medicinals in most any form plus handling uterine infusions, retained placentas, OB's, mastitis and even pregnancy testing in some

cases, and most any other veterinary procedure worth mentioning.

Most of these individuals have had some formal technical training via breeders school, etc. I don't think any of them would get much out of any veterinary technical training program that I have heard about. In fact, even if we should decide to hire a technician some day, I doubt that the training he would receive from a veterinary technician school would be of much benefit for him in our practice. We would be more interested in hiring someone with a good dairy background than a veterinary technician and train him or her for our specific needs ourselves.

I am well aware that our situation is not the same as a mixed practice or even large animal practices in many areas of the country, but I am certain at least in the western United States that there are other veterinary practices similar to our own and therefore feel it would be unrealistic to expect all veterinarians to support veterinary technicians or be required to hire only individuals with some sort of degree in veterinary technology.

Allen L. Wonderlich, D.V.M.
Waukon, Iowa

Veterinary technicians have a definite place in veterinary medicine. Many times in my discussions with practitioners, the subject of technicians has arisen. I cannot say enough about our technician. Small animal medicine and surgery comprises only 5% of our practice—we are basically a large animal practice, and we use a trained veterinary technician.

By the virtue of their disciplined training program, they can be a very big asset to a large animal practice.

The technical school graduates have had courses in all of the "ologies," animal diseases, restraint and handling of animals, bookkeeping, and surgical nursing, to name a few. Technicians can specialize in school and become more proficient in nutrition and husbandry sciences.

As we have developed total herd health programs for our clients, more and more of our time has been spent planning, calculating and reading to help us do a better job for our clients. Our technician has helped make this extra time available by doing the routine support duties of practice. This gives us more time each day on management tasks and planning.

In our three-man practice we have had a technician since June, 1975. We also have a full-time man that we have trained. I can truthfully say if I had it to do over or if the opportunity arises, I will hire another technician.

Our technician is "our girl Friday." She is our: 1) Laboratory technician—she does both microbiology and clinical pathology. She mails the proper samples to the diagnostic laboratory. She prepares oral vaccines and media. She draws blood samples for laboratory work. We can send her to the farm for paired serum samples. 2) Surgical nurse—she prepares sterile packs, prepares patients for surgery, and cleans up afterwards. 3) Radiologist—she properly labels films, positions the animals, sets the machine and takes care of processing the film. 4) Secretary—she works as our office girl on Saturday mornings, and during the noon hour. 5) Hospital medicine lady—she gives the medication and does the monitoring of hospital cases. 6) Pharmacist—she aids in drug preparations and dispensing. 7) "Chute man"—although we do not regularly take her to the country, because her time at the hospital is too

valuable to us, we do utilize her to prepare the chute and vaccines for the country. We do occasionally utilize her on a chute call. She can hold the tail of any calf and give vaccines and antiparasite medication. 8) Barn and kennel person.

The technician makes practice much more enjoyable. You may say that we have an exceptional person as our technician. That is true. However, we have had trainees in our office and although they are not as polished and seasoned as our regular technician, they, too, are outstandingly trained.

You may have a person that you have trained on the job, working for you like we do. This is the training method that has been used the longest for training assistants. Believe me, there is no comparison. The technician does many tasks with a professional flair. I don't know how I would ever find the time to train a person to do all the things that our technician does just be second nature.

Salaries for graduate technicians are not that much higher than those paid for on-the-job trainees. Graduates start at \$450-\$1,000/month.

If an assistant is allowed to contribute to his or her full capabilities, hopefully we large animal practitioners will not be looking for something else to do after 10-15 years of practice because we have become burned out.

A veterinarian needs to be trained in how to use an assistant. I thoroughly agree with the thought that the ultimate in poor personnel utilization is two veterinarians holding an animal while a third veterinarian pushes the timer to take a radiograph. Technicians can, and should, work with the veterinarian as a team.

Let a technician get involved in your practice and see the benefits that others have been enjoying for years.

New Treatments I Am Using in My Practice

Robert J. Harris, D.V.M.
Turlock, California

New treatments we use in our practice. I would like to rephrase the title to read new and old practices that keep our practice busy.

We have a five-man dairy practice in the San Joaquin Valley in central California. It is an area with average dairy size of about 250 cows. Almost all drugs and vaccines are available to the dairyman through lay outlets and traveling vans. Advice of varying quality is also dispensed by these lay personnel. Any equipment available to the veterinarian is also available to the dairyman through these same sources. Yes, our practice has made many changes over the past 25 years. We have changed from a mixed practice to bovine practice as other clinics became available to relieve our necessity to maintain small animal and equine service. This change to all-bovine practice has been of great help to us as we are now

considered cow practitioners by our clients.

In recent years we have improved our laboratory service primarily in an effort to reduce the time necessary to get an answer to field problems. We now culture many of our suspected salmonella cases. We use brilliant green agar and verify a red staining culture with Salmonella O Polyvalent Antiserum to get clumping if salmonella-positive. A second specimen is incubated in selenite broth to be used in cases of a negative or no growth on first brilliant green agar streak. This procedure can often produce a positive salmonella with antibiotic sensitivity cultures in 36 hours or less. This is a great time saver over sending cultures out to our state laboratories. We do use our state laboratory to confirm salmonella species when we deem it necessary.

We are using our laboratory more and more in culturing mastitis clinical cases to keep track of species involved. It has been especially helpful in

monitoring some of our herds that are approaching 85-95% CMT negative on their monthly milk test.

We have just recently added media necessary to check for mycoplasma. This will be helpful in monitoring tank samples as well as suspicious mycoplasma from clinical cases of mastitis.

We use a field nitrate-nitrite test kit. In a very few minutes the test will give a nitrate or nitrite reading that is rough but has been very close to readings on duplicated samples run at a commercial laboratory. We use (Nitrate-Nitrite Test Kit Model NI-12), Hach Cenical Co., P. O. Box 907, Ames, Ia. 50010.

During mid- and late-summer months we often have rather severe outbreaks of salmonella diarrhea or salmonella cepticemia with pneumonia. During the same period we have some very serious pasteurilla pneumonia outbreaks in calves. Both types of pneumonia usually occur in calves 6-18 weeks of age. Treatment is difficult and expensive because of the long period of treatment needed and the inaccessibility of the calves at this age. We have found that in our area *Salmonella dublin-typhinurium* bacterin and *Pasteurella haemolytic-multocida* bacterin when repeated four to five times, even on young calves, will give us good results during this period of the calf's life.

We recommend the dairyman to vaccinate with *Pasteurella haemolytic-multocida* bacterin every two weeks all calves receiving milk. In our area this assures four to five vaccinations before the calves are weaned. We encourage a year-round program but pasteurilla pneumonia is not a winter problem in our area, so it is difficult to maintain. We strongly advise immunity by early summer. The program works but is difficult to maintain. Often the outbreak is in progress when the program is initiated or reinitiated. The results are often dramatic at this time because the outbreak stops where the full program starts and calves get the four to five bacterin injections.

On the salmonella bacterin we recommend its use only in herds that have had a salmonella problem diagnosed. We would advise vaccination of milk cows twice during the dry period. Before the cow program becomes effective and to keep a longer immune period in calves we recommend the same program on calves as was recommended on the pasteurilla. The calf program seems to give good immunity past the 2-6 month period of the calf's life. In our area this is usually the critical period.

The use of Utrecht Fetatome plus years of ex-

perience has been a help for us in handling difficult calving problems.

Formulation of our own mastitis preparation for the dry cow treatment has been very helpful. With strict pH control, sterile equipment in mixing, testing each mixed formulation for accidental contamination, and restricting shelf life to 30 days, we have had very good results with years of repeated usage by many dairies. It has assured continued use of a quality product instead of changing with every new product presented by the traveling door-to-door veterinary medicine wagon.

In a five-man practice it is possible and often happens that one does not even see some of your fellow veterinarians for several days, let alone discuss a problem. We meet for breakfast every Friday morning and have a leisurely 1-1/2 hour meal. It has proven very important to keep abreast of the overall problems in our practice and to discuss cases, clients, treatments and even politics.

We have converted our corrals formerly used for horse cases to use for very valuable, hard-to-breed dairy cows. We bring the cows to the clinic where we can do daily palpation and follow the heat cycle and try to breed at the proper time. We have the client furnish the semen and we do the breeding. It has been good for us and the client.

It would not be proper to discuss new procedures in our practice that have been useful without mentioning some of the practices that have stood the test of time and have been very helpful in establishing our practice over many years. All of our I.V. sets, syringes, calving chains, surgical instruments, etc. are brought back to the office after each usage and cleaned, heat sterilized, and wrapped individually before going back to the field for reuse. This is a practice that takes time and effort but sets a pattern to keep us always conscious of cleanliness and reminds the client that cleanliness is very important.

We have been very fortunate during the past twenty-five years to have had only two extremely capable, dedicated, people-oriented, front desk receptionist and office managers. I cannot express how important it is to have the front desk and phone handled by capable, dedicated people who handle your clients with a personal touch, keep them at ease and yet maintain an air of business professionalism.

We have been fortunate.

Observations on the Fatty Liver Syndrome

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We still have not come up with a good scientific term for this disease condition. We began to recognize it in central Iowa five or six years ago, but others were

diagnosing it before that time. It is a nutritional problem related to total caloric intake and the balance of nutrients, particularly in late gestation, with clinical problems developing at the onset of lactation.