Practice Tips

Presented at the XVII World Buiatrics Congress — XXV AABP Conference
August 31 - September 4, 1992 St. Paul, MN

Rock 'Em, Sock 'Em, and Bang 'Em

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In the Midwest where I practice, the majority of dairy operations have tie stalls. Tie stalls are always a concern when it is time to treat the individual cow. It seems as though it is nearly impossible to properly restrain the cow for IV or oral treatment. I use the rock 'em and sock 'em method that always makes it easy to get the job done.

I always use a rope halter to restrain the cows. After attaching the rope halter to the cow's head, I then pull the animal forward. I wrap the rope around a stall pipe in the direction the head is being pulled and then pull the head up tight to that pipe. I then take the rope and pass it over the cow's neck and tie it tightly to the stall pipe on the opposite side. This keeps the animal secure and prevents her from pulling back over the stall and making treatment difficult. This simple practice tip has saved me a great deal of time as well as frustration. The cow tolerates it well, too.

The second practice tip is Bang 'em. Every dairy practitioner must vaccinate calves for Bangs disease and this routine task can be a problem especially if all your supplies are not handy and readily available. I use a carpenter's apron that holds everything I need. It holds the syringe and vaccine, the tooth brush and paste, the nose lead, the tattoo pliers, the scissors, and the ear tags and tagger. Everything is available at all times and it makes it very easy to vaccinate calves efficiently.

I realize these practice tips are not earth shattering, but I do know they can make routine practice much easier for you.

Will the Real Air Flow Please Stand Up

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The first air flow meter offered to veterinarians in the U.S. was an instrument provided by the then fledgling Bou-Matic Milkers, Inc., Ontario, CA back in 1957.

Similar to the air flow meters of today, the instrument was essentially a 1½ stainless steel cylinder employing rows of orifices to be opened for admission of air into the system — one row of 9 holes rated at 5 CFM(ASME) and one row of 9 holes rated at 0.5 CFM. The total capacity was 49.5 CFM. The instrument was calibrated at 15 inches of mercury (15" Hg) and the vacuum level was measured by Bourdon gauge mounted on the top of the cylinder.

This instrument was sufficient for most milking systems in 1957 as air flows uncommonly exceeded 50 CFM. With the increase of "recommended" air flow on a milking cluster basis went from 5 CFM to 10 or 12.5 CFM per unit, additional capacity was required so additional rows of holes were added to the cylinder and/or orifice size was increased.

The Bourdon gauge has remained mounted on the top of the cylinder.

There are four most likely sources of error in the determination of correct air flow, error especially pronounced on high air flow systems - ie., in excess of 100 CFM:

- reducers used to gain access to the system
- Bourdon gauge mounted on the instrument
- point of access into the system
- air flow measured at 15" Hg rather than the plant operating vacuum level.

The Surge air flow meter has a total capacity of 349.5 CFM — three orifices sizes (calibrated at 15" Hg) 6 at 50 CFM, 9 at 5 CFM and 9 at 0.5 CFM. There are three access port sizes, 3 inches (3"), 1¾", 1 ⅛".

The Bou-Matic air flow meter has a capacity of 293 CFM — two orifice sizes (calibrated at 15" Hg) 18 at 11

CFM, 9 at 5 CFM plus a 50 CFM adapter. There are three access port sizes, 1¼", ¾" and ⅜".

To illustrate the magnitude of possible error, in a double eight herringbone parlor, effective reserve* and manual reserve** were measured at two sites: 1) at the regulator located in the milk house on a separate PVC line, 3" inside diameter (I.D.) approximately 50 feet (50') in length 2) at the lid of the receiving jar located in the parlor.

The test results summarized in Table 1 are a striking example of the variation in measurements. The Effective Reserve pump capacity varied from 57 to 181 cfm free air; the Manual Reserve varied from 149 to 221 cfm; and the vacuum measured near the regulator varied from 12.1 to 16.1" Hg according to the particular conditions of test!

Table 1. Effective Reserve (ER) and Manual Reserve (MR)

		Vac at regulator
1. Bou-Matic air flowmeter (AFM)		
(a) Manometer on AFM = 11.8"	ER =133 cfm	12.1" Hg
	MR = 176 cfm	12.7" Hg
(b) Manometer on m/line 11.8"	ER = 135 cfm	12.15" Hg
2. Surge meter with tapered connecting plug		
(a) Manometer on AFM = 11.8"	ER = 57 cfm	12.25" Hg
	MR = 149 cfm	16.1" Hg
(b) Manometer on m/line 11.8"	ER = 164 cfm	12.15" Hg
3. Surge Meter without tapered plug		
(a) Manometer on AFM = 11.8"	ER = 87 cfm	12.2" Hg
	MR = 190 cfm	13.8" Hg
(b) Manometer on m/line 11.8"	ER = 181 cfm	12.15" Hg
	MR = 221 cfm	12.5" Hg

(Mein and Dahl, Wisconsin Veterinary Medical Association 1991)

* Effective reserve: The volume rate of air admitted at or near the controller location that will cause the vacuum level to drop approximately 2.0 kPa (0.6 in. Hg) below that existing when all milking units (with liners stoppered) and all accessories are in operation.

** Manual reserve: The volume rate of air admitted at or near the controller location that will cause the vacuum level to drop approximately 2.0 kPa (0.6 in. Hg) below that existing when all milking units (with liners stoppered) and all accessories, except the controller, are in operation.

Test conditions for vacuum and airflow measurements in double-8 parlor:

Pulsators and units not operating.

Airflow measurements were made with either the Bou-Matic or Surge airflow meters, mounted on the plastic lid of the receiver.

Vacuum measurements were made with a mercury manometer (replacing the Bourdon gauge) connected either to:

(i) the body of the air flow meter or the first milkline inlet in the parlor

(ii) a drainpoint near the regulator or to a tapped inlet 30" downstream from the Sentinel 350 regulator location in the milkhouse.

Measurement of system vacuum:

At Receiver 12.42" Hg (and at first milkline inlet)

At Regulator 12.2" Hg (at drainpoint)

12.22" Hg (at tapping 30" downstream).

Note: Vacuum level at the pump inlet under these conditions was 12.7" Hg.

Comments on Table

The pattern of variation in these seemingly random numbers clearly shows at least 4 problems.

1. The tapered plug, used to connect the Surge air flowmeter to the system, induced errors in reading both vacuum level and air flowrate (compare readings 2a and b, 3a and b).

2. Even without the tapered plugs, reading errors occurred at high air flowrates when the mercury manometer was connected directly into the meter body (compare MR for 3a and 3b).

3. The Surge meter appeared to measure a higher air flowrate than the Bou-Matic meter under similar test conditions (cf. MR for 1a and 31). This brings into question the calibration of the two meters.

4. The pipeline layout in the parlor (in which the regulator is mounted on a separate branch to the balance tank on a 3" line with an effective length of 50 ft) causes real problems with regulator efficiency. Although vacuum at the receiver was lowered to 0.6" Hg to measure Effective Reserve, the vacuum at the regulator fell only about 0.1" Hg (from 12.2" to 12.1") when measured with the Bou-Matic air flowmeter. Thus, the regulator could not respond to vacuum drops that it did not know about because of the resulting pressure changes in the branch line to the regulator and the receiver vacuum line.

Recommendations

1) Preferably, the outlet of the flowmeter should be the same diameter as the pipeline to which it is connected - ie., at airflows exceeding 100 CFM (ASME), 3" I.D.

2) Insert the air flowmeter into an access port no smaller in diameter than the outlet of the flowmeter.

3) Replace the Bourdon gauge with a well-type mercury manometer.

4) Tap in a 1/16" pressure fitting 5-10 pipe diameters downstream from the airflow meter system access port.

5) Establish the manual reserve at plant operating vacuum.

Taking the Cowboying Out of Cowboying Practical Beef Facilities

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The veterinary practitioner is exposed to all types of restraining devices — all the way from the lariat to the super effective, quiet operating hydraulic mechanisms. With any facility, design must be such to protect people and livestock from injury and to move animals smoothly and gently. We all know that once you have been on a specific farm or ranch to work the cattle, it is relatively easy to predict working time. As human nature is, we know that only some of the operators will forget cowboying and improve their facilities to enhance safety and working time.

Other concerns that may arise is the close scrutiny we may receive from animal rights groups on humane animal treatment and the potential for various legal implications, whether right or wrong.

Generally, once the client's facilities and attitude are known, the practitioner will generally consider one of several options.

1. The present facility is satisfactory.
2. Encourage the client to bring his animals to your facility for services.
3. Elevate fees to make up for inconvenience.
4. Try to change the cowboy's mind set to help instill confidence in you.

During my years in practice I learned that many wasted hours, energy expended, and compromised safety did not have to occur always.

The following tips are examples of practices that may help curtail the dollars lost due to poor management (cowboying), faulty equipment and/or adverse facility design.

1. Producer with a lariat—you know you're in trouble if this is all that is available.
2. For ear tagging large bulls try using an electro-ejaculator impulse to inhibit head swinging while attaching the tag.
3. Use a tilting table to control exudate spillage during C-sections on cows with emphysematous fetus.
4. A portable calf table on wheels is valuable in saving time and is safe for man and animal.
5. Carry extra panels inside the chute to facilitate adapting to or narrowing owner's facilities.
6. Persuade the "cowboy" to believe in you, the veterinarian, and to trust your advice.
7. Establish the "total picture" concept of livestock management and husbandry.

Finally, if all else fails in having the client ready with the cattle in and workable facilities available — Try this idea:

The veterinary personnel that has to always do cowboying for someone should hire an attractive very small female veterinarian. Assign her to the client who wants the veterinarians to do his cowboying. When she arrives at the place, any self-respecting "cowboy" will say, "What is this?". Then he will proceed to get the stock in and provide facilities in the future for her without fail.

This presentation was accompanied by a series of slides with the following scripts:

Slide 1 (Facilities)

The 25th Anniversary of the AABP Convention is a milestone of significance to bovine practitioners and their constituents. The learning experience and exchange of information has upgraded our expertise and has helped provide better medical care for our patients and their owners.

Slide 2 (Cowboys)

Historically the rope and halter were primary restraint tools and are important in some cases today in the U.S. and worldwide. Although still important, better restraint techniques and equipment have enhanced the working of cattle.

Slide 3 (IV)

These improvements include smooth working, quiet and safe chutes in addition to our chemical restraints, analgesics and tranquilizers.

Slide 4 (Man/Rope)

Today if you go to the client's work facility, and this is all he has for restraint, you know you are in trouble.

Slide 5 (Cowboying)

Cowboying is sometimes necessary but cowboy

attitude and understanding of animal care is mandatory to get the job done right.

Slide 6 (Work Facility)

Doing it right is truly helping the patient by practicing gentle, humane ways to restrain the animal.

Slide 7 (Vet/Client)

Communicating with the cowboy to explain these important issues will help instill his confidence in you and he will trust your advice.

Slide 8 (Tilt/Chute)

This sturdy and quiet tilting chute can help you, help your patient to alleviate its health problems.

Slide 9 (Bulls)

For Example—

- Foot trimming becomes easier.
- For ear tagging large bulls try using an electro-ejaculator low stimulus control knob to inhibit head swinging while attaching the tag.
- Use a tilting table to control exudate spillage during C-sections on cows with emphysematous fetus.

Slide 10 (Chute/panels)

Carry extra panels inside a portable chute to facilitate adapting to or narrowing a producer's facilities.

Slide 11 (Cow/Calf)

Establish the "total picture" concept of livestock management and husbandry.

Slide 12 (Woman Vet.)

Now, if you are a veterinarian who has a client that wants you to do the cowboying, never has the cattle ready, and has no workable facilities available — Try this idea: You should hire an attractive, very small female veterinarian. Assign her to the client who wants the veterinarian to do his cowboying. When she arrives at the place, any self-respecting "cowboy" will say, "What is this?". Then he will proceed to get the stock in and provide facilities in the future for her without fail.

Slide 13 (Word slide)

Above all, Do No Harm.

To: your patient
your client
yourself

Slide 14 (Vet Aesculapius)

A great profession

Expert Witness: Your Credibility is at Stake

Richard Huston, *DVM*
Faribault, MN

The chances that you, your practice and/or one of your clients will be involved in a lawsuit is increasing every day.

If this does happen, you may play a very important role as a witness.

You will either be called as a fact or an expert witness.

As a fact witness, your role is as an observer of fact who merely relates what happened.

More likely, you will be called as an expert. In this role you will be asked to interpret facts and offer your opinions about the matters being litigated. You often become a teacher to the participants of the case — namely the lawyers, judges and jurors. You will probably know more about cattle than anyone else in the room.

You will be asked to give your testimony either in a disposition, the courtroom or both.

In either case, your testimony is given under oath, recorded and transcribed by a court reporter.

Prior to your giving your testimony, the key word is **preparation**.

Preparation is practicing good medicine, keeping excellent records and knowing the subject matter.

If you ever anticipate there may be a dispute of any kind, keep a detailed log and take pictures and/or videos. A camera can be very valuable and an irrefutable ally.

Review the case, evaluate the records and study. Make sure you have all the pertinent data and take the time to be prepared.

As an expert you will be hired by someone. Make it clear prior to involvement, that you need time to prepare. They expect to pay a professional fee for your preparation and testimony. Be up front about this and discuss the parameters of your involvement.

What's important when you testify?

1. Look and act like a professional. Like it or not, how you dress and act will probably have an impact on the lawyer questioning you and others involved in

the case. In all likelihood, it will also affect how you feel about yourself. Makes you a positive.

2. Be prepared. Have all the documents, know the case and know about the problem being litigated. You can't ever know too much. Most common areas of litigation these days are stray voltage, feed, milking equipment, vaccine failures, toxins and sometimes veterinary malpractice.

3. Be honest and consistent. Nothing destroys credibility quicker than dishonesty or the perception of dishonesty. Practice putting the truth into a clear picture that anyone can understand. Be prepared to do this under pressure.

4. Be an advocate of your own opinion. Form your opinions carefully and accurately, and stick to them. If new information is presented you have a right and obligation to evaluate that information. New information may cause you to change your opinion. This is okay.

5. **Have patience. Be calm. Don't argue. You will be represented by an attorney, let him argue for you!**

6. Listen to and answer only the question asked. Make sure you understand the question. Your answer should be complete, accurate and brief. There is nothing wrong with not knowing the answer. If you don't. just say it. Don't compromise yourself by guessing. If you have a question, ask for time to talk privately with your lawyer.

7. Depersonalize your testimony. You are not there to down grade a farmer, company or an expert. You are responsible for giving an unbiased opinion concerning the issues at hand.

   Sometimes you'll be asked to evaluate other experts. A good response is "I don't know what other experts believe, but my opinion is. . . and here are my reasons. . . "

Being an expert witness need not be a bad experience.

Proper preparation and honesty are the two keys to the credibility of yourself and the profession.

Be credible . . .

Bloodless Castration Technique

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The instrument used in this presentation is a modification of the commercially available EZE Bloodless Castrator, developed and manufactured by Wadsworth Manufacturing, St. Ignatius, Montana.

The modification consists of a pneumatic cylinder in place of the hand operated piston grip mechanism. Other than increasing the speed and ease at which the operation is performed, the basic use of the instrument remains unchanged.

Some advantages of the bloodless castration instrument over other methods of castration include:

- less animal discomfort
- fewer post castration complications such as hemorrhage and infection, and scrotal swelling, as associated with burdizzo use
- morbidity costs and death loss resulting from excessive hemorrhage or infection
- no climatic limitations, such as time of year procedure is performed, weather considerations, or flying insects
- minimal effects on weight gain and feed intake
- delayed need for growth promotant implants.

Equipment and facilities used in this demonstration are:

- pneumatic castrator instrument
- latex tubing and metal clips
- compressed air supply and air hose
- hydraulic squeeze chute
- tetanus toxoid and growth promotant implants.

The procedure involves few steps which can be learned in minutes.

The metal clip is correctly placed with the notch in the front of the instrument corresponding to the ridge on the metal clip.

Before using, the tubing is inspected for flaws and irregularities. If present, these sections are discarded.

A length of tubing is passed through the clip, a loop is formed, and passed back through the clip, securing it on the left hand side of the fork.

The operator grasps the scrotum, checks for the presence of both testicles and the loop is placed over the scrotum, positioning it just above the proximal aspect of the testicles. All slack is removed from the free end of the tubing before securing it in the right hand notch of the fork.

The instrument is held steady at a perpendicular angle to the scrotum. The air valve is switched, changing the direction of air flow, which draws the fork back, completing the final step of constriction. The handles, located near the front of the instrument are squeezed together tightly, crimping the metal clip around the ends of the tubing. The operator should hear or feel a pop, indicating the clip has been crushed.

The excess tubing is cut as close to the front of the fork as possible, leaving long tails of tubing to reduce the chance of slippage. The objective of this procedure, by pulling the latex tubing extremely tight, is to completely constrict blood flow to and from the scrotum and testicles. In doing so, nervous innervation is interrupted, causing the area below the loop of tubing to become numb in a few short hours.

Most animals will exhibit signs of discomfort which may range from 30 minutes up to two hours. This will be more apparent with the larger animals. Most animals are back on feed within the first 12 to 24 hours.

The scrotum with clip and tubing intact will fall off within two to three weeks, leaving the underside of the body smooth with only a small scar remaining at the application site.

Some disadvantages of the bloodless castrator instrument may include:

- equipment costs
  costs will vary according to alternative methods of castrating
- tetanus toxoid
  two doses of tetanus toxoid are recommended
- operator skill and procedure compliance
- appliance failure
  this includes failure of the tubing or clip

Surviving Tough Times: Getting Paid Before the Money Runs Out

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One of the best ways to survive tough times is to get paid promptly for the services you render and the products you sell. My practice began offering specific discounts for prompt payment about seven years ago. The client reception and overall success of this program prompted me to offer the details of our discounts to you tonight in the hope some of you might find application for it in your practices back home.

I am engaged in a one veterinarian bovine practice that is ninety percent dairy. The practice area currently covers thirteen counties in two states located in the Southeastern United States. Some of the things we hoped to accomplish with a discount plan were: 1) to have our bills paid promptly and with high priority, 2) to promote greater participation in production medicine programs and 3) to simplify drug pricing.

The practice offers a discount of 10% on drugs and supplies for cash or payment within 10 days of invoicing only to clients who are on a routine production medicine program. Discounts are only available on current purchases and all other accounts must be paid in full. No discounts are ever given on travel charges or services (all services are billed by the hour). No price breaks are given for quantity purchases. Program clients are assured of our best price on any quantity when they pay promptly. I know 10% may cause some of you to sit up and take notice, however, it has that same effect on clients and it is an easy figure to calculate.

One other tool with the discounts that has proven useful is the timing of our billing. We try to send our monthly bills (for those clients being billed) on about the sixth of each month. Milk checks to most dairies in our area come around the fifteenth of the month. By doing this, the dairyman has a day or two after he receives his milk check to pay and save 10% on his drugs and veterinary supplies. Many a client has spoken of how the bill with the biggest discount moves to the top of the TO PAY stack.

I became acutely aware of how effective this program was during the past two years. As most of you

probably know, the dairy farmers in the United States experienced a dramatic decline in the price they received for their milk beginning in the Fall of 1990. This created severe cash flow problems for a large majority of the U.S. dairymen including most of my clients. The situation in the Southeastern U.S. was further complicated with the bankruptcy filing of Land of Sun Dairy in February of 1991. Approximately one-third of my clients failed to receive full payment for most of their January and February milk production due to this filing. Those clients have not received any payment for this milk to this date.

What have the results been during the past year which began on such a sour note? Over the past twelve months 95% of the clients eligible to receive discounts paid in a timely fashion and claimed their discounts.

I see the advantages to my practice of offering discounts in this way including:

- Ours is one of the first bills paid by the client.
- Practice has shifted more strongly to routine programs on farms. New clients attracted are more likely to be the type to accept a production medicine approach.
- Sales of drugs and supplies have increased through competitive pricing.

I am sure this approach will not work in every situation. It has however, been a nice adjunct to and not a substitute for services I hope are competent and economically competitive.

"Nipped in the Bud-With Buddex" - The Buddex Dehorner

Jim Fountaine, *DVM*
AABP Convention
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In keeping with the theme of this conference, the 25th AABP Convention, I will discuss a different method for the task of dehorning cattle. Many methods have been used over the years such as saws, gougers, paste, hot electrical dehorners and keystones.

The past 3 years I have used the Buddex dehorner in many client herds and feel it is the best solution to a necessary but often times disagreeable task.

Description

The Buddex is a cordless, precise cutting tool to use on young calves one to three weeks of age. It surrounds the horn bud with a cauterizing incision through the skin. Blood flow to the horn tissue is cut off causing the horn bud to dry up and shed off.

When pressed down against the horn bud, the wire ring tip will instantly heat up to 1400 degrees F (750 C). It has a nickel cadmium battery that takes 1000 charges and discharges. The dehorner is activated by an internal spring loaded switch. As you press down, the switch makes contact heating up the wire and illuminating the L.E.D. light.

Technique

The recommended age to use on is baby calves before the horn bud erupts through the skin. Proper calf restraint is important. Press the Buddex against the horn bud at a 90 degree (perpendicular) angle. It is important to twist or rotate 1/4 turn as smokes appears to cut a 360 degree incision. Do not exceed 10 seconds per horn. When doing multiple calves, be careful not to over heat the dehorner, allow it to cool off between calves. It can do 10-15 calves/charge. After using, remove the hair buildup inside the ceramic head.

Advantages

1. It is fast, with instant heat, thus no waiting for the unit to warm up. This saves both labor and time.
2. It is cordless, with no cord to drag or moving of calves.
3. It can be used both winter or summer.
4. Is less stressful, and more humane with no setback to the calves (We, as veterinarians must be cognizant of the animal welfare issue).
5. Since there is no bleeding, it helps control blood borne diseases such as Bovine Leukosis Virus.
6. With the smaller surfaces, there is less smoke than conventional electrical dehorners.
7. It fits well in routines such as castrating, ear tagging, removing of dew claws and vaccinations on regular herd health visits where dehorning is the task of the veterinarian.

Disadvantages

1. The cost is greater than other dehorners. $140 dealer, $185 retail.

2. There is some smoke and odor compared to saws, gouges, etc.

3. Good restraint is important. Struggling animals could limit the success to get a complete incision.

4. In ambulatory practices where large numbers of calves are dehorned, keeping it fully charged can be a problem. The vehicle cigarette lighter can be used to keep it charged.

5. Over heating of units has been a problem.

Conclusions

The Buddex is a safe, precise instrument to dehorn baby calves. It is less stressful to the calves and saves time. I have used it successfully on thousands of calves in my practice.

Available from:
Buddex
Jenrik Marketing Group, Inc.
P.O. Box 127
Olinda Trail
Scandia, MN 55073

A Picture (Graph) Is Worth a Thousand Words

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As we all know the most difficult task we have as professionals is assimilating all the bits of information that we have gathered with regard to a particular situation and developing a useful approach to resolution of a problem, or optimally, avoidance of a negative situation. The next job is convincing our clients we know what we're talking about!

Routinely we work with a large scope of clientele ranging from high tech, aggressive businessmen with multimillion dollar agribusinesses to individual producers working the family farm. Their abilities and knowledge vary as well as our ability to interact, whether it be proactive or reactive. But, a method that has proven to be highly efficient and very successful as a communication tool is the use of graphics.

Applying graphing techniques helps to clarify, delineate, and exclamate information that sometimes is hard to retrieve from data, or from visual assessment of on-farm management, as in the following cases:

The first is a 1200 cow dairy that is body condition scored on a monthly basis. After scoring in March of '92, what was not seen in a dry cow pen was depicted clearly in the March BCS graph. The dry cow group appears to have started to significantly increase their BCS. Subsequent data collection and information retrieval shows that BCS increase was occurring in the late lactation period. The action taken due to this increase was to evaluate ration and feeding procedure and readjust to what the cows were telling us. It was also noted that as these cows reached parturition, there was a significant increase in the incidence of metabolic disease. During following months BCS revealed that in April '92 we still see elevation in body condition but by May '92 the monthly graph reveals more desirable scores during this period of the lactation cycle.

Another situation in which we have found graphics to be valuable puts to use the Heifer Hustle graph utilized by Dr. Andy Johnson. Here is the common situation of a producer usually managing a small tie stall dairy housing facility following the ancestral practice of raising heifers on pasture during summer months, thus allowing for very low maintenance and care. Very often, as is the case in this example, there is a loss of opportunity to achieve appropriate height and weight at a young enough age to achieve maximum productivity throughout the life of the animal. In this case we were able to visualize this concept by graphing heifers as they came off summer pasture and noting significant size for age deficiencies. The heifer group was again graphed after winter housing and feeding. A significant trend toward achieving the goal height and weight was noted. As a result, the producer was happy to simply offer a little additional feed along with summer pastures to achieve his goals.

We have found that graphically we are able to clarify our thoughts and better convey our ideas. Effective communication is truly the key to success in practice and a graph is worth a thousand words.

Subcutaneous Fluid Administration for Scouring Calves

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The subcutaneous route of fluid administration to calves is often overlooked but can be easy, economical and very beneficial. Subcutaneous fluids are most appropriately used to augment oral fluid delivery in calves that are moderately (7-8%) dehydrated. Small body mass relative to surface area and good skin elasticity allow administration of fluids at a significant percent of body requirements. This presentation is intended to offer some simple guidelines for when, where and how to use subcutaneous fluids for maximal benefits and minimal problems.

Calves with mild dehydration typically show mild skin tenting over the eyes and neck in response to the pinch test, have a moist cornea, minimal enophthalmos, mucous membranes are still moist, extremities are usually fairly warm, and the calf may be slightly depressed but still stands when aroused and still suckles fairly well. Such a calf is likely about 5% dehydrated and is an ideal candidate for oral fluids. Oral fluids are typically delivered at about 5% body weight so this fluid delivery can bring the calf rapidly back toward normal hydration status. Ongoing losses can be met with continued oral fluid therapy. Usually the gastrointestinal system is working adequately in a calf with this degree of dehydration, allowing rapid and efficient absorption of fluids and electrolytes.

By contrast, the severely dehydrated calf can be characterized as having a skin tent over the eyes and neck that persists longer than five seconds and perhaps indefinitely in response to the pinch test. Such calves also have a dry cornea, no tearing, and severe enophthalmos with a space more than 4 mm between the medial canthus and the globe. Mucous membranes are dry, cool, and poorly perfused, and the calf is nearly comatosed, not rising following stimulation, and has cold extremities. Such a calf is likely 10% or greater dehydrated. Oral fluids are a poor choice of therapy because gastrointestinal motility is likely poor in such a calf so that absorption is very limited and does not supply enough fluid to correct more than half the dehydration fluid losses. Appropriate treatment for a calf of this nature should include intravenous fluid administration.

The ideal candidate for SQ fluid therapy is the moderately dehydrated scouring calf. Such a calf is characterized by skin tenting that persists for 3-5 seconds over the eyes and neck, a cornea that is drier than normal, and a moderate degree of enophthalmos (2-4 mm between medial canthus and globe). Such calves usually have tacky mucous membranes and cool extremities; they are notably depressed and may be recumbent but usually can rise or stand when stimulated and maintain a modest suckle reflex. This description typically represents a calf about 7-8% dehydrated. At this level of dehydration, oral fluids alone will not correct dehydration satisfactorily. At best, the fluid deficit could be corrected with a minimum of two successive oral fluid treatments. The use of SQ fluid therapy along with oral fluid delivery can promptly restore normal hydration so that ongoing losses can be met with oral fluid therapy alone.

The thumb rules we follow in administering SQ fluids to calves are as follows:

1. Calves greater than 8% dehydrated are not good candidates because severe dehydration causes enough peripheral vasoconstriction that the fluids are not adequately absorbed; therefore, the ideal candidate is less than or equal to 8% dehydrated.

2. The administered fluids should be warmed to body temperature or 1° to 2° above. Warmth will stimu late increased circulation to the area and enhance absorption of the fluids, as well as warm the chilled calf.

3. The fluids administered should be isotonic because hypertonic fluids will tend to withdraw fluid from the vasculature and prolong the rate of absorption.

4. No glucose should be included in the SQ fluids, as glucose provides an ideal medium for bacterial growth and complete sterility at the puncture site through the skin cannot be guaranteed.

5. The administered fluids should be sterile in order to reduce the chance of subcutaneous abscess formation.

6. The sites of administration should be clean. In a calf that is clean and dry, a simple skin prep may be satisfactory for bolus injection. When a drip is used and the needle left in place, the sites of injection should be clipped and aseptically prepared to reduce bacterial contamination.

7. The rate at which fluids may be administered is variable. They can be given by bolus or rapid flow but we find it is best to hook up an IV administration set and allow the fluids to run at a fast driprate. This allows more even distribution of the fluid in the subcutaneous space. The IV tubing can be secured to the calf's dorsum using tape and a suture or a band of tape around the body, so the needle is not pulled out if the calf moves.

8. The preferred sites for administration are high up on the neck or thorax, just cranial to the shoulder or caudal to the scapula. This provides four sites for administration per calf and the fluids can be equally distributed amongst these four sites.

9. We typically expect uneventful absorption of the fluid at a rate of about 15 ml/kg per injection site. In a typical 35 kg calf, this allows about 500 mls per site or a total of 2 liters per calf. This amount of subcutaneous fluid is usually absorbed within 4-6 hours.

10. The patient should be monitored for excess fluid accumulation and ventral gravitation of adminis tered fluid.

Providing oral and SQ fluid concurrently will usually bring the moderately dehydrated calf back to normal hydration. Subsequent electrolyte and fluid therapy can then be administered orally to match ongoing losses.

New Old Technique for Spaying Heifers

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Introduction

Advantages of spaying

Before we discuss the technique used for spaying heifers, I would like to review why we might choose to spay heifers. The number one reason to spay heifers is to prevent unwanted pregnancy. Additional advantages of spayed heifers include reduced riding activity, bull management, disease prevention and improved production. Producer discussions often will focus on the potential for improved performance in spayed heifers. Spaying heifers should not be expected to improve average daily gain just as castrating bull calves does not improve average daily gain. Implanted spayed heifers will perform equally as well as intact heifers.

Pregnancy in market heifers

Again spaying heifers is a valuable management tool to prevent unwanted pregnancy when heifers may be accidentally exposed to bulls. The associated losses due to pregnant heifers in the feedlot include pregnancy exam costs, abortion costs, reduced performance due to calving problems, realizers (salvaged animals) and reduced dressing percentage.

Solution

There are at least five commonly used techniques used to spay heifers. The procedure used should be clean, fast, non-invasive and cost efficient. These criteria are quite important when we are dealing with large herds in range conditions.

Scene of spaying in the 1930's

Spaying heifers is not a new development. Producers in the United States have been spaying heifers since at least the 1890's. Obviously the procedure depicted here does not meet our criteria of clean, fast non-invasive and cost efficient. This has prompted creative surgeons to devise improved methods for spaying heifers.

K-R Technique

One of the more recent and innovative procedures is the Kimberling-Rupp technique, commonly referred to as the K-R technique.

Picture of a K-R Instrument

Dr. Cleon Kimberling and Dr. Gary Rupp devised this technique and the K-R instrument in the early 70's while on staff at Colorado State University. The instrument is manufactured and distributed by Jorgensen Laboratories of Loveland, Colorado.

Scene of procedure being done in chute The K-R technique is done with the animal standing in a head catch or chute. An assistant washes the perineal area of the heifer and the instrument is inserted into the vagina. A retractable trocar point allows the operator to enter the instrument into the abdominal cavity through a puncture.

Scene of rear end of heifer with tool in vagina

The hand in the rectum is used to pick up the ovaries and deposit them into the cutting chamber for incising. Both ovaries can be incised and removed with one entry into the heifer.

Picture of tool with ovary in chamber

This method of spaying is so clean and non-invasive that we generally do not administer antibiotics to control any post operative infection. Once the technique is mastered, one can spay from 40 to 60 heifers per hour with a crew of three assistants.

Scene of spaying in the 1930's

I think you will agree the K-R technique is a vast improvement over the way heifers were spayed 100 years ago.

Measuring Real Changes in Milk Production

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Frequently our dairy clients tell us that their milk production has recently increased or decreased. This statement is usually made in connection with their idea of the reason for this change.

In these cases milk production was almost always calculated by measuring the milk in the bulk tank and dividing by the number of cows being milked. This can be misleading. There are circumstances in which pounds of milk produced has increased but value of product has decreased such as in cases of decreased milk fat content. The opposite is also true. Pounds of production decreases but fat milk percent increases. Changes may also reflect increases or decreases in average days in milk for the herd or reflect a difference in the number of heifers in the herd.

The challenge then, is to determine if production has changed in response to a change in management. These changes could include ration reformulations, new facilities or different personnel.

To properly measure changes in milk production we need to adjust for changes in the number of days in milk and if possible changes in milk fat. Most computer systems will extrapolate production to 305 days and correct for changes in milk fat content and mature equivalent (ME). This is commonly called 305 day ME. The same can be done by adjusting to 150 days in milk and correcting for fat content. This is commonly called adjusted and corrected milk. How can these measurements be used to determine changes in production over a period of time? A statistical technique for comparing milk production changes over an increment of time was introduced to me by Dave Galligan of the University of Pennsylvania.

The method is to compare those cows in the herd that have 305 day milk or 150 day milk extrapolations for two consecutive test days. This allows each cow to serve as her own control. In serving as her own control variations due to season, lactation number and genetic makeup are controlled. This is a powerful statistical advantage! What emerges are production changes that are real. A Paired T Test is then done to detect incremental differences significantly different than zero.

The procedure is simple. List in the first column the 305 day milk for last month for 30 to 40 cows, then list in the adjacent column the 305 day milk for each of the same individual cows for this month. A spread sheet can be used to do the statistical functions required for a Paired T Test. Alternately these columns can be listed in a statistics program and a Paired T Test can be run.

The result is a measure of average change positive or negative and a statistical determination as to whether these changes could have occurred due to random variation or chance.

It is beyond the scope of this discussion to elaborate on the Paired T Test but it is adequately covered in any statistics text and included in statistical analysis computer programs.

Fresh Air for Herd Health

John Ferry, *DVM*
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The surest way to maintain producer profit is from production based on optimum cow comfort and health.

When designing housing for our dairy cattle, we try to emulate this ideal outdoor scene. These cows breath fresh air, have shade from the sun, a dry, soft, comfortable place to lay down, and no impedence to their efforts

to stand up. Unfortunately, the "great outdoors" isn't so great.

After a rainy summer like we've experienced for the past few months, the scene under a shade tree is more likely to look like a cow is in mud to her belly.

In northern New York, where I work, the outdoor scene more often looks like a snowy scene. So it is necessary to provide confinement housing for our cattle, but when we design that housing, we need to keep that ideal scene under the shade tree in mind.

Let's not use weather as an excuse to mismanage our cattle.

Our production medicine programs should seek to control the controllable management factors, so that we properly manage the whole picture.

Perhaps foremost of these controllable management factors is **cow comfort**.

Of the many controllable factors associated with cow comfort, we must consider ventilation.

The goal of ventilation is to create air exchange. The warm, humid, pathogen dense air the cows exhale must be replaced with fresh air. In cold weather we can visualize this warm, humid air leaving the barn.

Too often, ventilation is thought to end with installing fans.One farmer put in so many fans that when he turned them all on the barn moved across the road!. We can add fans until we suck the cows out of the barn . . . but we haven't created air exchange unless we also provide inlets for fresh air.

We need to place fans on one side of the barn, and a system of continuous inlets on the far side. As the fans create negative pressure in the barn, fresh air is drawn in through the inlets. The cooler, outside air drops to the floor, is pulled through the cows replacing their exhaled air, and is exhausted through the fans on the far wall. Very few things will improve cow health and production as reliably as proper air exchange, but convincing producers of this need can be frustrating.

To aid in my discussion of ventilation with producers, I built a demonstration box. It is patterned from a similar demonstration box that Dr. Donald Bates has used for years. This box represents a conventional dairy barn. It has fans on one side, and a continuous inlet on the other. Two poles inside the box have yarn attached, to demonstrate the presence of air flow in those "stanchions". *(model exhibited)*

With the continuous inlet open, the fans running, and the door closed, the yarn inside the box is pulled toward the fans. The motion of the yarn demonstrates the air exchange taking place in the box.

When the door is opened, the yarn falls limp. This very forcefully demonstrates to the farmer the folly of running fans while doors or hay chutes have been left opened. Opening and shutting the door on my demonstration box easily convinces farmers that they effectively shut down their air exchange for most cows in the barn when a door or hay chute is left open, in spite of how many fans are running.

Air exchange must be provided for every individual in the barn. A draft moving air from a large opening to the fans has no effect on air quality for most of the herd, regardless of how cold the barn gets.

Shutting the door again restores the yarn to it's proper "flying" position, indicating good air exchange. A second common problem in conventional barns is running fans, but providing no inlets at all.

Shutting both the door and our continuous inlet nicely demonstrates the failure to provide air exchange without proper inlets. Even though the fans are still running wildly, our yarn has fallen limp again.

Looking at some brown gauze and red yarn in front of the fans, we see they both are pushed outward by a fan with ample air supply.

When the bar is closed up tight, the fan continues to run, but air is actually pulled through it backward by a larger fan seeking air. We see that the red yarn has been pulled out of sight toward the fan, and the brown gauze is being pulled backward as well.

We have all been frustrated by herds with chronic, mild respiratory disease, and chronic disappointing production. We can change rations with every new fad of the day, but production stays the same. Many of these herds are simply lacking air exchange. We might discuss this problem for hours, with no result. Making proper ventilation visual, with my box, helps farmers to understand the shortcomings of their present system, and focuses them on proper principals for updating their facility.

Herd Check Report Card

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Dairy clients often judge the success of their breeding program by what percent of the cows examined for pregnancy are actually found to be pregnant. However, this information only provides half the story, and is really more an indication of how effective heat detection has been than of conception rate. To get the complete

picture, we need to compare how many animals are confirmed pregnant to the number that were bred in the appropriate time period.

For example, suppose we check for pregnancy 35 days after breeding. We look back to 35 days before the current date, and continue looking back until we get to cows which were checked the previous month. By noting the number of cows bred in that time period, we can see how many pregnancies **could** have resulted if all cows bred had conceived. We then can divide that number into the number of actual pregnancies we find, and arrive at a conception rate for the period in question.

We can also see how effective heat detection was, by comparing the number of cows seen in heat and rebred to the number that were not seen in heat but also not pregnant. All of this probably seems pretty confusing. Let me give an example.

Suppose I am at Jim's farm on the first of August. I was last there for herd check on the first of July. Going through Jim's breeding chart, I note the number of breedings between May 26, which was the last date I could have checked on the July herd visit, and June 25, which is the last one for today's visit.

This chore is made easier if Jim keeps a running list of cows bred on a daily basis. The total number of breedings gives me the number of possible preg-nancies if every animal had conceived. Of course some of these cows repeated and were rebred, so they are not examined at all. The rest are examined, and some are pregnant while some are not.

Suppose in Jim's herd there were 40 cows bred between May 26 and June 25. The following chart shows what numbers might result from those forty breedings, and how I would interpret them.

	# Bred	# Rebred	# Examined	# Pregnant	# Open
A.	40	10	30	26	14
B.	40	5	35	10	30
C.	40	24	16	10	30
D.	40	3	37	26	14

On line A, we have a case of good fertility and good heat detection. 24 of 40 cows bred conceived, which is 60%. Of the 14 that did not conceive, 10 were found in heat and rebred. That is 71%.

Line B shows that opposite extreme. Only 10 of the 40 bred (25%) turned out to be pregnant. And only 5 of the 30 (17%) not pregnant had been found in heat and rebred. Both conception rate and heat detection rate were poor in this case.

Line C represents poor fertility but good heat detection. Again only 25% of all breedings conceived, but of the 30 open, 24 (80%) were found in heat and rebred.

Finally line D is good fertility but poor heat detection. 60% of the cows bred became pregnant, but of the open ones only 3 (21%) were detected in heat and rebred.

Of course on only one visit, any of the above cases could occur on any farm. But over a period of months we can see what pattern dominates and can zero in on making adjustments as needed. By charting the conception rate and the percent of open cows rebred each month, we get a good picture of where we have been and where we are going with the reproductive program.

Electronic Identification of Livestock

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The relatively new technology of using electronic identification implants for livestock production is getting closer to reality. The small transponders are currently available in plastic ear tags and hopefully will be approved for implantation in the ear itself in the near future.

The Technology:

The electronic transponders available from Destron/IDI® and two other companies are about the size of a growth implant currently in use for cattle. They consist of an electromagnetic coil, tuning capacitor and microchip sealed in a biocompatible glass. The approximate read range is 6 to 12 inches using a hand held device that sends a signal that excites the chip and then interprets the signal.

Properly implanted chips will provide a rapid and highly accurate method of identification for each animal. Each identification number is unique and will be in the foreseeable future since approximately 34 billion 10-digit codes will be available. The transponders are also a permanent method of identification as long as they are not damaged following implantation.

Potential Uses:

The ability to accurately monitor information collected on each animal during routine herd work from birth through processing will improve genetic selection, nutrition and feeding practices, health monitoring, marketing schemes, and overall herd management. It will also bring production more closely in line with consumer demand. These factors should reduce costs and enhance efficiency and profitability through concepts such as "Value Based Marketing". Issues related to "Total Quality Management" such as tissue residue concerns for any substance, injection site problems, and infectious disease could be better handled through animal traceback. This methodology could improve the eradication and control of many livestock diseases. The use of electronic identification could be of additional benefit in assisting brand boards and livestock markets with proof of animal ownership. This could be enhanced through the use of alternate implantation sites that are less accessible or more difficult to retrieve than in the ear.

Current Status:

The use of electronic identification transponders under the skin of the ear for cattle is currently under consideration by the Food and Drug Administration. Acceptance by producers and meat packers should rapidly enhance industry acceptance and widespread use of the technology. Currently, the cost is approximately $6-8 for implants and $800 for the hand-held reader. These costs should decline with greater volume.

**Information courtesy of DESTRON / IDI, Inc., Boulder, CO 80301*

Abstracts:

Pathogenesis of bovine pneumonic pasteurellosis

C. T. Gonzalez, S. K. Maheswaran

British Veterinary Journal **149**, 183

In the pathogenesis of pneumonic pasteurellosis in cattle there is an abrupt change in the nature of the microflora populating the upper respiratory tract from commensal to pathogenic, that is from a predominance of *Pasteurella haemolytica* serotype 1 to serotype 2. This change occurs after periods of stress associated with the development of the disease. This review considers recent evidence for the hypothesis that surface-expressed factors specific to serotype 1 organisms could be critical in mediating their adhesion to and colonization of the upper respiratory tract. Such factors may increase the number of serotype 1 organisms deposited through infective droplets into the lungs above the number that can be cleared by the normal lung defences. The organisms may then introduce many foci of infection that eventually progress into the pneumonic lesions characteristic of the disease.

Anti-Trichostrongyle antibody responses of calves

L.C. Gabarre, P. Nansen, J. Monrad, J. Gronveld, P. Steffan, S.A. Henriksen

Research in Veterinary Science (1993) **54**, 340

The serum antibody responses to *Ostertagia ostertagi* and *Cooperia oncophora* of first and second season calves grazing permanent pastures indicated that calves without previous exposure to the trichostrongyles mounted significant parasite-specific IgG1 responses within two months of starting to graze. A weaker serum IgA response to *O ostertagi* and weaker IgG2 responses to both parasites were also observed. No consistent IgM responses were observed in either age group. Second season calves had significantly higher levels of IgG1, IgG2 and IgA antibody at turnout than first season calves, but only the IgA levels against *O ostertagi* increased during the second grazing season. The serum antibody levels of first and second season calves grazed separately or together suggested that mixed grazing has no effect on antigen priming.