Dear Food Animal Practitioners,

We had a very successful Academy Meeting in February here at Virginia Tech. It was done in cooperation with the vet student Food Animal Practice Club. With students and practitioners we had nearly 100 people participate. Topics were internal medicine with Dr. Tom Divers from Cornell, and a cow reproductive update with excellent Virginia Tech and outside speakers. We had an afternoon with wet labs and case discussions. For the first time the meeting went from Friday noon through Saturday to provide the full 15 hours of CE required for the licensing requirement.

Next year's meeting format is still being discussed. Do we go back to Harrisonburg or come back to VA Tech with the students, or do something cooperatively with the VVMA in Roanoke? Let Tom Massie, Academy of Food Animal Practice President, (Home:(540)-987-1200; Mobile:(540)-222-5064; E-Mail:tbmdvm@yahoo.com) or Tom Van Dyke, Academy of Food Animal Practice Vice-President Tom Van Dyke (Work:(540) 676-3401 Home:(540)-628-8603 know of your preferences.

Several of you have made comments about our tracking program at the vet school and the alleged "anti-mixed practice" sentiment. Academy member Dr. Jim Adams from Carroll Veterinary Clinic spoke to students at the College recently on the benefits of mixed practice. Dr. Tumwald, Associate Dean for Academic Affairs, was impressed enough to send all students and faculty a synopsis of Jim’s excellent presentation. I attach the gist of it here:

Dr. Jim Adams gave an excellent presentation on multi-species practice. The title of his presentation was "How to Have it All: Mixed Practice".

1. The old concept of a solo practice overworked and underpaid veterinarian has been replaced by the new concept of a multi-veterinarian practice with reasonable work hours and good compensation.
2. In his practice, emergency duty has decreased because of effective wellness programs.
3. He addressed financial benefits including provision of a vehicle, lower cost of living in a smaller town, etc.
4. Multi-species practice also offers emotional benefits including the opportunity to get outside.
5. Opportunity to change. Multi-species practice enables a veterinarian to develop multiple skills and thus more opportunity to change career focus if needed or desired.
6. In summary, multi-species practitioners have the best of both worlds.

My best for a profitable, pleasant spring and summer,

W. Dee Whittier, DVM
Extension Veterinarian
Calf Removal Improves Conception Rates

Less than 6% of beef cows in the United States are artificially inseminated each year. An important reason why so few are artificially inseminated is the problem of estrus detection. An estrous synchronization protocol that induces estrous cycles, is easy and inexpensive to administer, can be administered in a short period of time, and synchronizes follicular development to allow timed insemination is needed by the beef industry.

Timed insemination with the Ovsynch protocol results in higher conception rates. The Ovsynch protocol requires handling cows three times for injections (Days 0, 7, and 9) and a fourth time for mass insemination (Day 10). Variations in the Ovsynch protocol that included timed insemination at the same time as the third injection on Day 9 (CO-Synch) resulted in lower conception rates compared with insemination 24 hours later. Temporary calf removal for 48 hours has generally increased conception rates of beef cows to a timed insemination with other synchronization protocols. Our hypothesis was that 48-hour calf removal would increase conception rates to a timed insemination with the Ovsynch and CO-Synch protocols that would be acceptable to beef producers. Thus, the objective of this research was to evaluate effects of 48-hour calf removal on conception rates of cows synchronized using the Ovsynch or CO-Synch protocols.

Beef cows (n = 473) from two locations were randomly allotted to one of four treatments for synchronization of ovulation. Ovulation synchronization protocols included the Ovsynch protocol with (n =114) or without (n =123) 48-hour calf removal from day 7 to 9. The Ovsynch protocol included administration of GnRH (100 µg; i.m.) on day 0, PGF2a (25 mg; i.m.) on day 7 and GnRH (100 µg; i.m.) with timed insemination on day 10. The CO-Synch protocol was the same except that insemination was on day 9. Blood samples were collected from all cows on day -10 and day 0 for analysis of serum progesterone. Cows with at least one serum progesterone concentration greater than 100 µg/ml were considered to be cyclic at the time of treatment.

Conception rates of cows that received the CO-Synch + calf removal, Ovsynch + calf removal, CO-Synch, or Ovsynch protocol (63, 61, 54, and 52%, respectively) were not different. Conception rates were not different among CO-Synch- and Ovsynch-treated cows; however, both estrual status and 48-hour calf removal affected conception rates. Conception rates of cyclic cows (66%) were greater (P = 0.01) than those of anestrous cows (53%), regardless of which synchronization protocol was used. When data were pooled across synchronization protocol, conception rates of cows with 48-hour calf removal (62%) were greater (P = 0.09) than conception rates of cows without calf removal (53%).

The CO-Synch + calf removal protocol induces a fertile ovulation in cyclic and anestrous cows, requires handling cattle just three times, results in high conception rates from timed insemination, and should be a useful program for synchronization of ovulation in beef cows. However, the beneficial effects of calf removal appear to be age-related and conception rates increased with increasing age. The percentage of anestrous cows before synchronization decreased with increasing age. Calf removal appears to have been more beneficial for 3- and 4-year-old cows than for first-calf heifers (2-year-olds) and older cows.

Efficacy of an Inactivated Respiratory Syncytial Virus Vaccine in Calves

The aim of this study was to determine whether an inactivated bovine respiratory syncytial virus (BRSV) vaccine would protect calves from infection with virulent BRSV. Twenty-seven nine-week-old calves seronegative for BRSV exposure. Procedure—Group- 1 calves (n=9) were not vaccinated. Group-2 calves (n=9) were vaccinated on days 0 and 21 with an inactivated BRSV vaccine containing a minimum immunizing dose of antigen. Group3 calves (n=9) were vaccinated on days 0 and 21 with an inactivated BRSV vaccine containing an amount of antigen similar to that in a commercial vaccine. All calves were challenged with virulent BRSV on day 42. Clinical signs and immune responses were monitored for 8 days after challenge. Calves were euthanatized on day 50, and lungs were examined for lesions. Vaccination elicited increases in BRSV-specific IgG and virus neutralizing antibody titers and in production of interferon--. Virus neutralizing antibody titers were consistently less than IgG titers. Challenge with BRSV resulted in severe respiratory tract disease and extensive pulmonary lesions in control calves, whereas vaccinated calves had less severe signs of clinical disease and less extensive pulmonary lesions. The percentage of vaccinated calves that shed virus in nasal secretions was significantly lower than the percentage of control calves that did, and peak viral titer was lower for vaccinated than for control calves. Results suggest that the inactivated BRSV vaccine provided clinical protection from experimental infection with virulent virus and decreased the severity of pulmonary lesions. Efficacy was similar to that reported for modified-live BRSV vaccine. Journal of the American Veterinary Medical Association, 2001:218:1973-1980

Comparison of Two Oral Electrolyte Solutions for the Treatment of Dehydrated Calves with Experimentally-Induced Diarrhea

We compared the ability of two oral electrolyte solutions to resuscitate calves with experimentally induced diarrhea and dehydration. Sucrose solution, furosemide (Lasix), spironolactone and hydrochlorothiazide (Aldactazide) were administered to 18 male Holstein-Friesian calves to induce diarrhea and dehydration. Clinical changes after 24 hrs. included severe diarrhea, moderate dehydration (8-10% body weight), azotaemia and clinical depression. Calves were then randomly assigned to one of three treatment groups (milk replacer, 2 l every 12 h; hyperosmotic oral electrolyte solution, 2 l every 2 h; iso-osmotic oral electrolyte solution, 1.5 l every 6 to 12 h) and followed for an additional 48 h. Compared to feeding milk replacer, the hyperosmotic solution significantly (P<0.05) improved hydration status, increased body weight, maintained urine production, decreased the degree of clinical depression and prevented development of metabolic acidosis, although serum glucose concentration was decreased at 24 and 48 h. The hyperosmotic solution produced a similar resuscitative response to the concentrations and lower serum, O2-OH butyrate and non-esterified fatty-acid concentrations, indicating that the hyperosmotic solution provided greater nutritional support. The hyperosmotic solution rehydrated calves faster and more effectively than feeding equivalent volumes of milk replacer. Therefore, it can be recommended as part of the initial treatment of dehydrated calves with diarrhea.

P.D. Constable, E. Thomas, B. Boisrame, Veterinary Journal, 2001:162:129-140, as reported in Animal Health Spectrum, Volume 13 No. 1, Spring 2002, Mississippi State University, Starkville, MS
Gentle Handling impacts Calf Growth and Meat Quality

Gentled calves show less fear and can thus be supposed to be less susceptible to stress generated by management practices in which human presence is involved, such as loading and unloading during transport prior to slaughter. Stress prior to slaughter is likely to reduce muscle glycogen level in vivo, which may in turn increase ultimate pH of muscles and may enhance the incidence of dark-cutting meat. Hence, lowered fear of humans and lowered stress during human handling before slaughter could be beneficial for meat quality. The aim of our study was to determine the effects of providing additional, gentle contacts to veal calves on their welfare, health, and productivity.

Twenty-two (22) veal calves were housed in individual crates. Half of them received minimal contact with the stockperson (controls), and the other half were given additional gentle contacts around meals, by stroking the calves and allowing them to suck the stockperson’s fingers, during the entire fattening period (21 weeks). Welfare was assessed through behavioral reactivity (reactions to handling, to surprise stimuli, and to novelty), neuroendocrine responses to stress (cortisol in response to an ACTH challenge, catecholamine synthesizing enzymes), and health (number of medical treatments, abomasal lesions). Calf productivity was assessed through growth rates and meat quality through glycolytic potential (an estimator of resting glycogen level in muscle), pH, and color.

Results of this study indicate that gentling calves around meals modifies their reactions to being carried, reduces the incidence of abomasal lesions, and enhances the glycolytic potential of muscles at slaughter. Calves that received gentle contacts were less agitated and tended to defecate less when handled in a cart on wheels than the control calves. Calves given gentle contacts had fewer abomasal lesions than controls (0/11 vs. 4/11). The glycolytic potential of the semimembranosus muscle was higher in calves that received gentle contacts than in controls (172.6 vs. 154.1 μmol/g), but no treatment effects were observed on meat pH, meat color, or growth rates. No treatment effects were found in reactivity to novelty and surprise stimuli, responses to ACTH, and catecholamine synthetic potential.

Gentling veal calves reduces their reactions to handling. Adrenaline, released by the sympathetic nervous system, stimulates the breakdown of skeletal muscle glycogen. Gentling is believed to reduce the activation of the sympathetic nervous system of calves during transport to the slaughterhouse, which results in a higher glycogen content at slaughter. No abomasal lesions were observed in gentled calves, whereas one third of the control calves had an ulcer or a scar around the pylori. Ulcers in veal calves are generally seen as a consequence of feeding high amounts and concentrations of milk replacer or feeding roughage in addition to high amounts of milk. Abomasal lesions in control calves may have been due to stress. Gentling veal calves around meals can improve some of their welfare by decreasing reactions to handling and by reducing the occurrence of abomasal lesions.


A Thought for Today
If you are going to try cross country skiing, start with a small country
Feeding Grass Silage in Early Pregnancy and Claw Health

Growth, keratinization and cornification of living epidermal cells are of great importance to the integrity of the claw horn and its ability to withstand environmental challenge. All these require a healthy blood flow to the claw, carrying a plentiful supply of oxygen, amino acids, minerals and other nutrients. Nutrition may cause alterations to the blood supply to the coria and epithelia thereby reducing claw horn integrity and predisposing animals to claw lesions and lameness. Claw horn lesions occur most commonly two to four months after calving. Both lameness and claw-horn disruption (CHD encompassing pododermatitis, sole ulcers, and white line lesions) are recurrent. Animals lame in their first lactation are two to three times as likely to be lame in their second. Equally, up to 50% of moderate-to-severe claw lesions are likely to recur in subsequent lactations.

The objective of this study was to investigate the effects of source of forage in early pregnancy on lameness and claw lesion development after first calving. This study used two groups of eight Holstein-Friesian heifers in early pregnancy fed different forages (hay (H)- or silage (S)-based diets) during the winter housing period. Then, having grazed together at grass, the animals were housed together as a separate group after calving under exactly the same conditions. Lameness and claw lesion development were monitored from approximately four weeks before until 20 weeks after first calving.

Lesion scores for both groups increased significantly 10 weeks after calving, but there was no significant difference owing to pre-calving diets until 20 weeks after calving when those animals in S were significantly higher (worse) than those in H (P=0.049). At this time claw-horn lesions in H were similar to those seen at 10 weeks. As claws became shorter and steeper after calving, so lesion scores were higher. They were also significantly negatively related to bulb hardness measurements. Lesion development was most common in the lateral hind claws and in the "sole ulcer" zone. All severe sole hemorrhage and sole ulceration were observed in this area. Occasionally, lesions were extensive enough to affect surrounding zones of the claw, particularly the white line. Heel erosion was associated with the hemorrhagic lesions. Hardness of the sole, especially the bulb, decreased throughout the experiment, particularly immediately after housing/calving. The hardness of the wall remained unchanged throughout. Hardness measurements from both bulb and mid-sole area (where most lesions occurred) were negatively correlated to total lesion score.

It was concluded that feeding grass silage to young stock may deleteriously affect subsequent claw health. Feeding acidic grass silage may predispose the animal to sub-clinical laminitis and lameness by reducing the pH in the rumen. The silage offered during the winter feeding period would have undoubtedly placed a large acid load on the animals compared to those fed hay.


“...I've learned that when I wave to people in the country, they stop what they are doing and wave back.”
Melissa, age 9
Biosecurity Issues for Virginia Cattle Operations: Preventing a Disease Outbreak

All successful cattle producers must have keeping their cattle healthy as a major objective. There are a number of approaches to accomplishing this goal. Vaccination programs, keeping resistance high through good nutrition, early detection and treatment of disease and a number of other management techniques are keys to keeping cattle healthy. One very important area of management that is key to disease prevention is biosecurity. The goal of biosecurity is to stop transmission of disease-causing agents by preventing, minimizing or controlling cross-contamination of body fluids (feces, urine, saliva, etc.) between animals, animals to feed and animals to equipment that may directly or indirectly contact animals. Biosecurity management practices are designed to prevent the spread of disease by minimizing the movement of biologic organisms and their vectors (viruses, bacteria, rodents, flies, etc.) onto and within your operation. When animals develop infectious diseases, the source of the infectious agent (virus, bacteria, parasite, etc.) is often unknown. Typical sources for the agents include:

- Normal inhabitants of the animal itself
- Normal inhabitants of other animals in the herd that don’t cause disease in these carriers
- Contaminants of feed or water
- Wildlife and other nonlivestock (horses, dogs, cats, rodents, birds and insects)
- The neighbor’s cattle
- Wind borne agents
- Visitors to the farm
- Normal agents in the environment
- Purchased animals that are sick or incubating disease

Biosecurity measure can be completely effective in preventing disease from some of these sources, somewhat effective with others, and completely ineffective with still others. Biosecurity can be very difficult to maintain because the interrelationships between management, biologic organisms and biosecurity are very complex. While developing and maintaining biosecurity is difficult, it can be the cheapest, most effective means of disease control available, and no disease prevention program will work without some biosecurity measures.

Of all the possible breakdowns in biosecurity, the introduction of new cattle and traffic pose the greatest risks to cattle health. Properly managing these two factors should be a top priority in your operation. Biosecurity plans should be developed to meet the specific needs of each operation.

Biosecurity has three major components:

- Isolation,
- Traffic control
- Sanitation.

When effectively managed these components meet the principle biosecurity objective of preventing or minimizing cross-contamination of body fluids (feces, urine, saliva, respiratory secretions, etc.) between animals, animals to feed and animals to equipment.

Isolation prevents contact between animals within a controlled environment. The most important step in disease control is to minimize commingling and movement of cattle. This includes all new purchases as well as commingling between established groups of cattle. Even in operations that have high cattle turnover, such as feedlots, keeping feeding groups from mixing is an important biosecurity measure. Isolate feedlot hospital cattle and return them to their home pen as soon as possible. Long-acting therapies have improved our ability to minimize movement of infectious organisms between groups. An important biosecurity action on farms is to separate cattle by age and/or production groups. Facilities should be cleaned and disinfected appropriately between groups. Visit with your veterinarian about specific isolation management procedures and how they can be applied to control targeted diseases.
Traffic control includes traffic onto your operation and traffic patterns within your operation. It is important to understand traffic includes more than vehicles. All animals and people must be considered. Animals other than cattle include dogs, cats, horses, wildlife, rodents and birds. The degree of control will be dictated by the biology and ecology of the infectious organism being addressed, and the control must be equally applied. Stopping a truck hauling cattle from driving onto your operation as a biosecurity measure for controlling BVD may not be beneficial since the virus is spread from animal to animal. Buying cattle from herds that have a verifiable quality vaccination program would be more important in maximizing biosecurity. However, it would be important for the truck to have been adequately cleaned before hauling the cattle. Traffic control can be built into the facilities design. An example would be placing cattle loading facilities on the perimeter of the operation.

Traffic control within the operation should be designed to stop or minimize contamination of cattle, feed, feed handling equipment and equipment used on cattle. Pit silos should not be accessible from nonfeed handling equipment such as loaders used outside the feeding area or vehicles that travel outside the feed mixing and handling facility. No one (manager, nutritionist, veterinarian, banker -- no one) should be allowed to drive onto the surface of a trench silo.

If possible, separate equipment should be used for handling feedstuffs and manure. Vehicles and employees should not travel from the dead cattle area without cleaning and disinfecting. The dead animal removal area should be placed in a location that allows rendering trucks access without cross-contaminating healthy cattle. Vehicle cleaning areas are becoming more common in commercial feedlots. Unfortunately they are frequently used only for trucks and heavy equipment. Management should consider extending a decontamination policy to other vehicles (especially tires) that are used across biosecurity control areas on the operation. Ask your biosecurity resource team to help you evaluate traffic control on your operation.

Sanitation addresses the disinfection of materials, people and equipment entering the operation and the cleanliness of the people and equipment on the operation. The main objective of sanitation is to prevent fecal contaminants from entering the oral cavity of cattle (fecal - oral cross contamination). Equipment used which may contact cattle's oral cavity or cattle feed should be a special target. The first step in sanitation is to remove organic matter, especially feces. Blood, saliva, and urine from sick or dead cattle should also be targeted. All equipment that handles feed or is introduced into the mouth of cattle should be cleaned, including disinfection as appropriate, before use.

Loaders used for manure or dead cattle handling must be cleaned thoroughly before using for feedstuff. It would be best to use different equipment. Minimize the use of oral equipment and instruments such as balling guns, drench equipment and tubes. If used at processing and treatment, thoroughly clean and disinfect between animals. Store cleaned equipment in clean, dry areas. Avoid storage in tanks or containers containing disinfectants because most disinfectants are neutralized by organic material. Disease transmission is commonly traced to the use of those storage tanks.

All beef cattle producers should develop a biosecurity plan and commit to its implementation. Committing to a biosecurity plan is a vital step toward controlling of infectious disease. Keeping pathogens out of a herd improves production efficiency, lowers costs and reduces risks to employees and family.

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11th Annual Northeast Dairy Production Medicine Symposium
May 3-5, 2002
This symposium will be held at the Embassy Suites Hotel in Syracuse, New York.
The registration fee is $150. Please contact:
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