VIRGINIA COOPERATIVE EXTENSION SERVICE

EXTENSION DIVISION - VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY - BLACKSBURG, VIRGINIA 24061

VIRGINIA-MARYLAND
REGIONAL COLLEGE
OF
VETERINARY MEDICINE

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, and September 30, 1977, in cooperation with the U. S. Department of Agriculture. W. R. Van Dresser, Dean, Extension Division, Cooperative Extension Service, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061; M. C. Harding, Sr., Administrator, 1890 Extension Program, Virginia State University, Petersburg, Virginia 23803.

MINIMIZING HAZARDS OF WASTE ANESTHETIC GASES IN THE OPERATING ROOM

Pollution of operating rooms with trace levels of anesthetic gases has become a concern in veterinary surgeries over the last decade. The National Institute of Occupational Safety and Health has declared that breathing trace levels of anesthetics is hazardous. Acute effects of trace level exposure may include nausea, diminished cognitive and motor skills, fatigue and headache. The most notable chronic effects are increased incidence of congenital anomalies in offspring from either males or females who are exposed to trace gases and higher risk of spontaneous abortion in females who are similarly exposed. Although most of the information to date does not establish a direct cause-effect relationship, much circumstantial evidence does exist which tends to incriminate all inhalant anesthetics including nitrous oxide as potential health hazards when breathed in trace levels. In addition, there is uniform agreement that no beneficial effects of breathing trace levels of anesthetic gases have been demonstrated.

One possible solution to operating room pollution might be the use of injectable anesthetics. The other possibility would be to vent waste anesthetic gases out of the operating room by collecting or scavenging them directly from the anesthetic machine. There are three key ingredients to successful evacuation of waste anesthetic gases from the operating room.

1. The pop-off valve or exhaust port from the patient circuit must have a connector which would allow all gases to be collected through a piece of tubing. Most of the recently manufactured anesthetic machines are properly equipped with a scavenge type pop-off valve. These valves may also be purchased to fit existing equipment. The cost ranges from $80-300.

2. A variety of collecting systems may be connected to the scavenge-type pop-off valve. In its most simple form, the collecting system consists of corrugated or rigid tubing extending from the pop-off valve through a wall or ceiling to the exterior of the building. Usually 1/2-3/4 inch (inside diameter) tubing is adequate for this type of passive system.

Instead of passing through a wall, the collecting system may be affixed to the exhaust vent of a non-recirculating air conditioning system within the operating room. The waste gas is drawn into the air conditioning vent along with other air from the room and exhausted from the building. Flammable anesthetics such as ether should not be vented in this manner.

Finally, the collecting system might be connected to one of several commercially available activated charcoal absorbers. These absorbers are easy to install and mount directly on the anesthetic machine. However, they do not absorb nitrous oxide, and they must be replaced periodically. Local building or fire codes may dictate which is the most appropriate collecting system in a given practice.

3. User awareness is the final key ingredient. All veterinary hospital staff should be encouraged to connect the scavenge system any time inhalant anesthetics are used. In addition to the scavenge system, other methods of reducing operating room contamination and exposure of hospital personnel might include filling vaporizers and changing carbon dioxide absorbers at the end of the surgery day. Exhausted carbon dioxide absorbent should be discarded outside the building, and rubber goods from anesthetic machines should be stored in well

ventilated areas. In addition, animals recovering from anesthesia should be housed in a ward or room equipped with a non-recirculating high air exchange rate ventilation system.

All of the scavenge systems described are relatively easy to install and operate; however, they should be checked periodically to guard against malfunctions which might adversely affect the patient. Two simple tests can be performed to verify proper operation of the scavenge system. The first test which checks for excessive vacuum on the collecting system is performed by attaching the system to the breathing circuit and occluding the Y-Piece that would normally attach to the endotracheal tube. With the oxygen flowmeter set 1-2L/min, if the breathing bag is consistently empty, there may be excessive suction on the scavenge collection system. The second test checks the capacity of the scavenge system to accommodate a large volume or flow of gas from the patient breathing circuit. This test is also performed by attaching the scavenge system to the breathing circuit and occluding the Y-Piece as before. The oxygen flowmeter is set at 8-10L/min. The breathing bag should fill but not be distended. If the creases in the breathing bag are not visible, there may be an occlusion in the collecting system between the pop-off valve and building exterior. Negative and positive pressure relief valves are available which would prevent these malfunctions from influencing breathing circuit pressures. These valves must be used if a non-passive scavenge system is installed.

In summary, careful installation, use and maintenance of scavenge systems should markedly reduce the level of operating room pollution and exposure of hospital personnel to trace levels of waste anesthetic gases. Periodic checks on equipment function will significantly reduce the risk to patients. -- C. J. McGrath, DVM, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA.

ENHANCING PALATABILITY OF MEDICATIONS FOR BIRDS

A highly effective method of administering unpalatable liquid medications to birds is to mix the various compounds with the vitamin-mineral supplement "Vi-Sorbin" (Norden Laboratories). The supplement is very tasteful to birds and does not discolor drinking water, an important consideration because birds generally refuse to drink water that is clouded. I have used this method for 15 years and have observed that the acceptance of antibiotics, antihistamines, and antidiarrheals is about 97 to 98% when the drugs are mixed with "Vi-Sorbin." Such a percentage of acceptance is much higher than I have achieved with other vehicles. A typical prescription for treating respiratory disease in a parakeet consists of 1.5 cc of chloromycetin succinate injectable, 0.25 oz elixir of benadryl, and enough "Vi-Sorbin" to fill a 0.5 oz dispensing bottle. The mixture is administered at the rate of 10 to 20 drops per ounce of drinking water for 8 to 10 days.---Kendall P. Svedeen, DVM, Animal and Bird Clinic, Mission Viejo, CA, as printed in Norden News, Fall 1980; as reported in Notes from the Extension Veterinarians, Kansas State University, June, 1983.

THANK YOU GEORGE WILL

In a splendidly reasoned column on the campaign to Save the Whales, a campaign which George Will called "a rare and refreshing example of intelligence in the service of something other than self-interest," he credited appeals to conscience from groups like Greenpeace and the Animal Welfare Institute with the International Whaling Commission's moratorium vote.

He concluded: "As I sit with pen poised over paper, I am struck by the oddness of cataloging reasons for abandoning the killing - the cruel and utterly unnecessary killing - of such mysterious creatures, about which we have so much to learn. It is possible, and not exactly wrong, to give practical reasons why saving the whales will be useful. But there are times, and this is one, for rising above utilitarianism.

"It is important to say that life is enhanced aesthetically by the knowledge that these sociable creatures are swimming - and singing - on the surface of the sea, and in the sunless depths below. Furthermore, mankind has dominion over the Earth, but mankind's unsteady, serpentine path toward finer sentiments can be measured, in part, by evolving standards of what constitutes civilized dominion over lower animals.

"Surely it involves a conviction, more intuitive than reasoned, that Creation, and we as the responsible portion of it, are diminished by wanton behavior toward creatures that so stunningly exemplify the mysteriousness of the natural."-- as reported in The Animal Welfare Institute Quarterly, Vo. 32 No. 1, Spring 1983.

PRACTICE TIPS

SEAT OF THE PANTS TEST. This test will quickly tell you if bedding inside a calf barn is dry enough, says Dr. D. J. Schingoethe, dairy nutritionist at South Dakota State University. Sit down in the pen. If your pants get wet, the bedding is too wet. --Dairy Herd Management, Feb. 81; as reported in Herd Health Memo, University of Kentucky, April 1983, #10.

HUTCH TIPS. You're not doing a 2-day-old-calf a favor by keeping it indoors, says Dr. Richard Everson, dairy production manager at Land O'Lakes, Fort Dodge, Iowa. Healthy calves who stay indoors for a week use their initial fat reserves to adapt to the barn environment. When they're put in a hutch, they have little fat reserve left and will lose body weight and may even die of starvation, he says. Feed hutch calves high quality milk replacer warmed to 98-100°F. He also suggests feeding at regular intervals, usually 12 hours. "When you're late, the calves will bellow, inhaling lots of cold air which could lead to pneumonia," he says. Feed three times a day in severe weather. ---Dairy Herd Management, Feb. 83; as reported in Herd Health Memo, University of Kentucky, April 1983, #10.

NOTES FROM NATIONAL MASTITIS COUNCIL MEETING

- Washing udders is of little benefit if teats are not dry before milking.
- Disinfectants in udder wash are of little benefit.
- Soft paper towels work best for drying.
- Although 99% of Minnesota dairy farmers surveyed washed udders, 41% used a common rag or spong; 55% didn't dry teats before milking. -- as reported in Herd Health Memo, University of Kentucky, April 1983, #10.

WILDLIFE MEDICINE

This is the second in a series of articles by Dr. Porter on treating wildlife. He is a co-founder of the Shenandoah Valley Wildlife Treatment and Rehabilitation Center in Waynesboro, a tax exempt, non-profit, educational corporation which offers medical and rehabilitation services at no charge.... Editor.

Wild bird poisonings vary with the location and time of the year. The most common substances toxic to birds include heavy metals, chlorinated hydrocarbons, and organophosphates. The clinical signs are usually non-specific but may include inability to fly, lack of interest, and sometimes an obvious neurological deficit. There may be nothing in the history or on physical exam to support trauma. Often birds with lead poisoning will exhibit anemias. Pellets may be radiographically visible in the digestive tract. Blood lead levels can be run by commercial labs. Lead poisoning is treated with calcium versenate (EDTA) at 50 mg/lb 1M and response is often dramatic. Often the nature of the poisoning is never determined, but the birds often will do nicely with supportive therapy including force feeding. One hawk brought in paralyzed required three weeks of care, but eventually recovered. Wild birds which have been confined for seven days or sometimes shorter periods usually require rehabilitation so that they can fly without becoming too exhausted.

There are several good texts on problems in wild birds. The most complete is Fowler's Zoo and Wild Animal Medicine. Kirk's Current Veterinary Therapy series also has numerous excellent chapters about birds. Raptor Care and Rehabilitation by Garcelon and Bogue, available from the Alexander Lindsay Junior Museum, Walnut Creek, CA 94596, is a useful, specialized and inexpensive text. There are also several books available about cage and aviary birds including those by Petrak and Steiner and Davis. -- Stuart L. Porter, VMD. Blue Ridge Community College, Weyers Cave, VA.

HORSE COLOR

Dr. Phil Sponenberg, assistant professor of veterinary pathology at the Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, and Dr. Bonnie V. Beaver, professor of veterinary anatomy at Texas A&M, are co-authors of a book on horse color. This definitive work, to be published in October, is well illustrated with color photographs of both rare and common coat colors found in horses. A genetic description and hypothesis concerning the inheritance of both color and patterns explains the results of various color crosses. The interesting

book provides a complete inventory and standardization of coat colors which should benefit scientists, breed associations and breeders alike.

SMALL ANIMAL MEDICINE AND SURGERY AWARDS

The Arlington Animal Hospital, Arlington, VA has established a $500 award for the senior students exhibiting the greatest interest and aptitude in small animal medicine and surgery. Separate awards will be given in medicine and surgery to seniors at the Virginia-Maryland Regional College of Veterinary Medicine. Recommendations will be made by the College's medical and surgical clinicians to the Awards Committee.

Drs. David Francis, Wayne Kimball and James McClure of the Arlington Animal Hospital proposed the awards during a visit to the College in May 1983.

WE NEED YOUR HELP

We make frequent attempts to update the mailing list for Virginia Veterinary Notes and our CE program brochures. It would be very helpful if you could notify us of address changes or new veterinarians moving into your area. Please help us to keep the newsletter and continuing education announcements coming regularly to the proper address. Thank you. -- Kent C. Roberts, DVM, College of Veterinary Medicine, Virginia Tech, Blacksburg, VA. 24061.

THOUGHT FOR THE MONTH

"Goodwill is earned by many acts; it can be lost by one."

Duncan Stuart

MUCOSAL IMPRESSION SMEARS FOR DIAGNOSIS OF PIGLET COCCIDIOSIS

Swine coccidiosis is a major diarrhea problem for pigs from 5-21 days of age. It is normally diagnosed by clinical signs and confirmed by microscopic examination of H & E stained sections of small intestine. Mucosal impression smears offer increased speed of diagnosis and allow presumptive diagnosis in field situations.

Sections should be taken from freshly euthanized pigs since degenerative changes start rapidly after death and make interpretation of smears more difficult. Segments of small intestine should be opened and gently blotted to remove excess fluid and debris. A glass microscope slide is pressed firmly to the mucosa, lifted away, air dried, stained with a modified stain (Wright's or Giemsa blood stain usually gives satisfactory results) and examined under a microscope for the presence of merozoites and other immature stages of coccidia. Oocysts are not usually observed.

Several smears may be needed from the intestine since lesion development is not uniform. Select sites with gross lesions. Several pigs may be needed to insure a correct diagnosis.--Abstracted from Stevenson and Andrews VM/SAC 1, (1982) p. 111-114 in Utah Veterinary Newsletter, July 1982.-- As reported in Veterinary Professional Topics, University of Illinois at Urbana-Champaign.

SWINE PRACTICE TIPS

Moving and Re-grouping Pigs - Every time a pig is moved or re-grouped, days to market weight is increased by 7 to 10 days.

Temperature Fluctuation - Use monitoring thermometer to check changes of temperature in 24 hours. Optimum: Not over 5° F. change in 24 hours will reduce respiratory problems.

Pseudorabies Lesion - Pseudorabies virus can produce nasal lesions indistinguishable grossly from inclusion body rhinitis.

Ventilation - A sow and litter produce 1 pound (1 pint) of moisture per hour. This amounts to 3 gallons per day. The ventilation system must remove this moisture or condensation will result in wet conditions.

Feed Conversion - Pork producers say that their feed conversion is about 3.5 to 4.0. Broiler producers say their feed conversion is 1.943. Pork producers need much better records of feed conversion.-- As reported in Veterinary Professional Topics, University of Illinois at Urbana-Champaign.

EFFECT OF LEVAMISOLE IN IMMUNE RESPONSES TO BOVINE HERPESVIRUS-1

The effect of levamisole on bovine immune responses to infectious bovine rhinotracheitis virus was assessed under laboratory and commercial feedlot situations. In all instances, levamisole appeared to have a beneficial effect on antibody responses of the cattle after vaccination. In the smaller scale pilot trials, levamisole appeared to be more efficacious when given 7 days after vaccination, presumably when a large amount of viral antigen was present as a result of viral replication. In the larger feedlot trial, however, response to administration of levamisole at the time of vaccination appeared to be slightly better than if given 7 days later. In all instances that animals had an antibody response before they were challenge-exposed to virulent virus, rectal temperature responses remained below 40°C, indicating that a threshold level of immunity may be acquired after the vaccination and that elevation of this threshold level does not necessarily alter the clinical disease. However, the amount of virus replication and shedding after challenge-exposure seemed to be correlated with the level of immunity. These results are discussed in relationship to the role of immunity levels to spread of virus within a feedlot -- L.A. Babiuk, Ph.D., and V. Misra, Ph.D., Americal Journal of Veterinary Research Vol. 43, August, 1982, No. 8, as reported in Veterinary Newsletter, Utah State University, October, 1982.

INTRODUCTION TO THE QUESTIONNAIRE ON BOVINE PARASITIC BRONCHITIS

Bovine parasitic bronchitis, the clinical manifestation of discyocaulosis, is caused by the presence of the nematode parasite Dictyocaulus viviparus. The disease is undoubtedly the parasitic infection most feared by herd owners in the temperate parts of the globe. In certain endemic areas parasitic bronchitis has been reported to be the most important killing disease of cattle. The acute disease produces respiratory symptoms which may lead to suffocation or may result in marked and rapid production losses in survivors.

Although modern anthelminthics remove existing worm burdens very efficiently, treated herds may suffer for prolonged periods because of the production losses and lung lesions caused by the parasite.

To the farmer the occurence of an outbreak in the middle of the grazing season often conflicts with his other activities and is an annoyance when no alternative grazing or roughage is available.

The development of a lungworm vaccine in Glasgow around 1960 represented a milestone in the control of bovine parasitic bronchitis. Its application in endemic lungworm areas in Great Britain and in certain areas of the European continent has greatly reduced losses and prevented outbreaks. However, Dictyocaulus viviparus has a much wider distribution including such areas as Virginia and Maryland where the disease, or the infection, may be present in the herd and larvae may be present on pastures of individual farms during some years but not others. Under such circumstances the infection may normally run a subclinical course, but sporadically severe outbreaks occur among all age groups. While the beneficial effect of vaccination is obvious in endemic areas and on farms with a constant lungworm problem, no effect has been demonstrated in areas with a low to moderate number of clinical cases. In such areas the anthelminthic treatment approach undoubtedly offers the best available alternative to vaccination in the control of the disease, and it is this principle which has been used for years by herd-owners and practitioners in herds where vaccination is not practiced. Although effective, this approach may not represent the optimum solution to control. Exploration of the possibilities for improved prevention and control are dependent on local knowledge of the epidemiology of this disease.

Development of the technique for the isolation of Dictyocaulus larvae from herbage enabled workers to carry out the experiments with single experimental calves on pasture. Their studies showed that there is a close correlation between the number of larvae in the pasture and the clinical effect produced on a susceptible calf. From this it follows that the infection on the pasture is of fundamental importance to the epidemiology of bovine parasitic bronchitis. Hence accurate monitoring of infection in the pasture appears to be a prerequisite to the exploration of its epidemiology.

It is our intention to start research on the epidemiology of lungworm disease here in Virginia and Maryland, and it is of great importance to obtain as much accurate information about the incidence of the disease as possible. It is in this context that this questionnaire should be seen and we sincerely hope that you will find time to answer the few questions and return the answers to us.

Thank you in advance for your kind cooperation in this matter.

Name: _____ Telephone _____
Address: _____
_____
_____

Size of practice; animal population:

Approx Number of dairy cows Grade 'A'	Others	Approx Number of beef cows

Are any of the following control procedures used in your practice for the control of lungworm?

1. Vaccination /_/
2. Strategic anthelmintic use /_/
3. Grazing management /_/

If so please detail below.

1. Vaccination

Month(s)	Vaccine	No. of farms Dairy	Beef

2. Strategic anthelmintic use

Month(s)	Before turning out to pasture yes	no	After yes	no	No. of weeks after
Number of farms		Beef _____			
		Dairy _____			

3. Grazing management

Specify: _____
_____
_____

Treatment of cases of lungworms:

Of the number of cases you have seen during the last year (page 2), how many have you treated with anthelmintics? _____

How many received 2nd and subsequent anthelmintic treatments? _____

How many received any other medication?

Specify type	No.
_____	_____
_____	_____
_____	_____

Number of lungworm cases within the last year.

Number affected (A); Number died (D)

		Dairy								Beef			
	Month	Lactating Cows		Dry Cows		Heifers		Calves		Breeding Cows		Fattening Stock	
		A	D	A	D	A	D	A	D	A	D	A	D
1982	May												
	June												
	July												
	Aug.												
	Sept.												
	Oct.												
	Nov.												
	Dec.												
1983	Jan.												
	Feb.												
	March												
	Apr.												
	May												
	June												

Comments: _____

_____

_____

Send responses to:

Dr. Brian Perry, Dr. Jorgen Hansen
c/o The Virginia-Maryland College of Veterinary Medicine
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TEACHING HOSPITAL DIRECTORY

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The LAST Test, not the least

Antibiotic residues in meat and meat products pose a nagging, costly problem. Each year, producers lose millions of dollars because of the non-salability of meat and dairy products with antibiotic residues. But, help is in sight.

In a recent publication which is being mailed to Extension offices nationwide, the Food Safety and Inspection Service of USDA has described a new test -- the Live Animal Swab Test (LAST) for antibiotic residues. LAST is used to test the urine of live cows on the farm. As USDA points out in Handbook 601, when the "urine is free of antibiotics, the tissue levels (of antibiotics) also have decreased and the animal can be safely marketed." USDA is also developing a modification of LAST which will be used to test animal blood for antibiotics.

LAST is a culture and antibiotic susceptibility test using *Bacillus subtilis* as the test organism and neomycin-containing discs as controls to demonstrate if the test is working properly. After a 50 mm agar gel plate has been thoroughly streaked with the *B. subtilis*, a neomycin disc (N-5 disc containing 5 micrograms of neomycin) is positioned on the plate using clean forceps or tweezers. For each test, a urine specimen is collected from a cow whose antibiotic withdrawal time has expired. (Although the handbook specifies that the best urine specimen for this purpose is the animal's first urine in the morning, this may be a bit difficult to obtain.) Sterile swabs are dipped in the urine, and excess urine is shaken free before the swabs are positioned and seated on the gel plate in proximity to the neomycin disc. The plate is then incubated for 18-24 hours at 84°F (29°C) and read as antibiotic-negative, antibiotic-positive or test inconclusive.

For step-by-step instructions on performing and interpreting the test, (even building an incubator) and the sources of supplies and equipment, request a copy of Handbook 601 from the United States Department of Agriculture, Food Safety and Inspection Service, Washington, D.C. 20250.

The Virginia-Maryland Regional College of Veterinary Medicine plans to incorporate LAST in our dairy herd health programs -- H. Fred Troutt, VMD, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA.

Meetings

September 14, 1983	Pruritic Dermatoses of the Dog and Cat The Cascades Williamsburg, VA
September 29-30, 1983	Bovine Practitioners Seminar Holiday Inn Frederick, MD
October 14, 1983	Equine Practitioners Seminar Ramada Inn Charlottesville, VA
For more information contact:	Dr. Kent Roberts College of Veterinary Medicine Virginia Tech Blacksburg, VA 24061

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Mollie Heterick, Managing Editor of Virginia Veterinary Notes

KC Roberts

Kent C. Roberts, D.V.M.
Extension Veterinarian

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