VIRGINIA-MARYLAND VETERINARY NOTES

Veterinary Teaching Hospital, Virginia-Maryland Regional College of Veterinary Medicine

September - November 2000 No. 97

WHAT'S INSIDE!

THOUGHT FOR THE MONTH

The ultimate success of any enterprise lies with the quality of the people it employs.
Anonymous

Kent C. Roberts, DVM
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How to Calculate Your Practice's Earnings

In the last article, we discussed the calculation of "Adjusted Net Cash Flow". This is the amount remaining from gross revenues after necessary operating expenses are met. It is the amount available to the owner to spend at the owner's discretion. The debt service and owner/chief of staff's (COS) personal compensation are made from this figure. In the well-managed small animal practice, this figure is typically 33-37% of gross – usually less to varying degrees in very high and low grossing practices.

So how do we determine a reasonable salary to pay the owner for being the chief of staff doctor. Hypothetically this could be a doctor hired by an absentee owner to run the practice. In the veterinary profession, small animal veterinarians are typically compensated at 23-25% of the income they produce. This would be the total compensation package, including FICA contribution and benefits. The calculation could look like this in a typical 2 doctor small animal practice:

Practice gross	$750,000
85% doctor-produced	638,000 ($112K as B & G, OTC, etc)
24% as total doctor salaries	153,000
Associates' salaries	50,000
Associates' FICA	3,800
Associates' Insurance package	3,000
Associates' CE package –	1,000
Associates' Dues and subscriptions -	500
Total Associates' compensation-	58,000 (rounded)
Owner/COS total compensation ($153K – 58K)	95,000 (rounded)

The associates' total compensation would have been expensed in the beginning to arrive at Adjusted Net Cash Flow. At this point, the reasonable owner/COS compensation is now deducted from Cash Flow (CF) to arrive at Gross Earnings, or return on investment. If the Cash Flow were say 33%, the pre-tax Gross Earnings would then be $153,000, or 20% of gross ($750K gross X .33CF - $95K COS salary = $153,000. It is purely coincidental to be the same figure as "total doctors salaries" above - no relationship between the two.). This is the gross earnings, or return on investment, created from all the practice's total tangible (equipment, inventory and working capital) and intangible ("Goodwill" as all-inclusive factors) assets. In the well-managed practice, this figure is typically 17-20% of gross.

A further exercise may be to separate the earnings, or return, created from the tangible and intangible assets. By this process, we determine the earnings individually from equipment, inventory and working capital (tangible assets). The "Excess Earnings" left over then is the earnings created from the intangible goodwill alone. Although not often, in some practices, it may be appropriate to separate these earnings in the practice evaluation process. This topic will be discussed in subsequent articles.

So, to determine the Excess Earnings in our subject practice, let's say:

Gross earnings generated from all practice assets			$153,000
			Earnings
Equipment value	$60K	12% =	$7,200
Inventory value	35K	5% =	1,700
Working capital	12K	5% =	600
Total earnings generated from tangible assets			$9,500
Balance of earnings generated from goodwill			$143,500 (19% rounded)

Notice that in our hypothetical practice, there is almost no difference in the gross earnings percentage (20%) and the excess earnings percentage (19%). This is the case in the great majority of small animal practices – maybe a 1-2% difference in the two earnings percentages.

The next article will begin an overview of various practice evaluation and "sanity tests" techniques.

Doyle Watson, DVM; President and Owner, Simmons & Associates, Inc; ***Veterinary Practice Brokers since 1977***

Long-term Immunity in Cats Vaccinated with an Inactivated Trivalent Vaccine

Objective: To evalutate duration of immunity in cats vaccinated with an inactivated vaccine of feline panleukopenia virus (FPV), feline herpesvirus (FHV), and feline calicivirus (FCV).

Animals: 17 cats

Procedure: Immunity of 9 vaccinated and 8 unvaccinated cats (of an original 15 vaccinated and 17 unvaccinated cats) was challenged 7.5 years after vaccination. Specific-pathogen-free (SPF) cats were vaccinated at 8 and 12 weeks old and housed in isolation facilities. Offspring of vaccinated cats served as unvaccinated contact control cats. Virus neutralization tests were used to determine antibody titers yearly. Clinical responses were recorded, and titers were determined weekly after viral challenge.

Results: Control cats remained free of antibodies against FPV, FHV, and FCV and did not have infection before viral challenge. Vaccinated cats had high FPV titers throughout the study and solid protection against virulent FPV 7.5 years after vaccination. Vaccinated cats were seropositive against FHV and FCV for 3 to 4 years after vaccination, with gradually declining titers. Vaccinated cats were protected partially against viral challenge with virulent FHV. Relative efficacy of the vaccine, on the basis of reduction of clinical signs of disease, was 52%. Results were similar after FCV challenge, with relative efficacy of 63%. Vaccination did not prevent local mild infection or shedding of FHV or FCV.

Conclusions: Duration of immunity after vaccination with an inactivated, adjuvanted vaccine was > 7 years. Protection against FPV was better than for FHV and FCV.

Clinical Implications: Persistence of antibody titers against all 3 viruses for > 3 years supports recommendations that cats may be revaccinated against FPV-FHV-FCV at 3-year intervals. - **Scott, F.W., et al (Am J V,et Res l999: 60: 652658) As reported in Animal Health Spectrum, Vol. 11 No. 2 Summer 2000, Mississippi State University**

A New Device for Stereotactic CT-Guided Biopsy of the Canine Brain: Design, Construction, and Needle Placement Accuracy

Computed tomography (CT) is an imaging technique that uses x-ray and computers to create cross-sectional images of structures. Stereotactic CT-guided biopsy is defined as the use of a stable apparatus to direct and perform tissue biopsies under CT guidance. For the brain, the principal advantage of stereotactic CT guidance over other biopsy techniques is its high accuracy in getting a sample from deep-seated lesions.

The objectives of this study were to create an inexpensive CT-guided stereotactic device adaptable to different canine head sizes and to test the accuracy of the device for needle placement in deep-seated brain targets. A biopsy device was created that consists of four main components: a CT table fixation device, a head fixture, a needle fixture , and motion control system. Accuracy was tested using 16 head and neck specimens obtained from dogs euthanitized for reasons unrelated to the brain. Deep-seated (caudate nucleus and pituitary gland) targets were identified on CT. After a 5 mm craniotomy, the biopsy needle, with CT monitoring, was progressively introduced into the target. The final needle track distance was measured on CT. The brain was removed and sliced to verify placement of the needle tip within the target and to measure the actual needle track distance. The total cost of materials and construction for the stereotactic CT-guided biopsy device was $785.00.

No difference in needle placement accuracy was identified for caudate and pituitary targets. Based on assessments by 2 independent observers, the caudate target was successfully hit 75% of the time. Pituitary targets were successfully hit 96.8 % of the time. Actual needle track lengths were an average of 3.2 mm less that the track length measured on CT. This difference was most likely due to incomplete staining of the bevel part of the needle track on gross specimens.

Alain, Giroux, Jeryl Jones, Jan Helge BÆhn, Don Waldron, Robert Duncand Karen Inzana
Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA

Drug Combination For Treating Giardiasis In Dogs

Giardia sp. is a protozoan parasite commonly found in the small intestine of dogs, cats, cattle, and other mammals. The importance of giardiasis in dogs is exemplified by its prevalence (reaching 100% in some kennels), seriousness as a disease entity, and possibility that it is a zoonosis. Approximately 70% of Giardia-positive dogs can be identified on the basis of one zinc sulfate concentration technique (ZSCT), and 93% can be identified on the basis of two-tests on the same dog.

Giardiacidal drugs used in dogs include fenbendazole (50 mg/kg, PO, q 24 hours, for 3 consecutive days) which has been shown to be effective in removing Giardia cysts from the feces of infected dogs. Clinical signs of side effects of drug administration were not detected. Fenbendazole is registered for use in dogs, but not specifically as a giardiacidal agent. Metronidazole is only approximately 67% effective, can occasionally cause neurotoxicosis, is expensive, and is suspected of being teratogenic. Albendazole is not registered for use in dogs, and has been associated with causing bone marrow toxicosis, resulting in pancytopenia in a dog and cat when used for extended periods for treatment of giardiasis.

A combination proprietary product containing praziquantel, pyrantel pamoate, and febantel (Drontal-Plus, Bayer Corp, Shawnee, KS) has been registered for use in dogs for treatment of ascarids, hookworms, and tapeworms. Of the 3 active ingredients, febantel is the most likely to have giardiacidal activity. Febantel is a probenzimidazole anthelminthic that is metabolized into fenbendazole and oxtendazole after oral administration.

The objective of this study was to evaluate efficacy of a combination of praziquantel, pryantel pamoate, and febantel at 2 dosages for treating naturally acquired giardiasis in dogs. Six male and 9 female Beagles were used in this research. Dogs were identified as naturally infected with Giardia sp. using the ZSCT, and were allocated to 1 of 3 groups. Group-1 dogs were treated orally with a praziquantel (5.4to 7 mg/kg of bodyweight), pryantel pamoate (26.8 to 35.2 mg/kg), and febantel (26.8 to 35.2 mg/kg) combination, every 24 hours for 3 doses. Group-2 dogs were treated with the combination once. Group-3 dogs were non-treated controls. Four fecal samples were examined, using the ZSCT, from each dog of each group within 6 days of the last treatment. Dogs were considered to have giardiasis if 1 or more of the fecal samples had positive results for Giardia cysts. Dogs were examined daily for at least 10 days after the last treatment.

Giardia cysts were not detected in the feces of any group-1 dog or in the feces of 2 of 5 group-2 dogs. Cysts were detected in the feces of 5 of 5 group-3 (non-treated control) dogs. Adverse side effects to the combination were not observed in any of the 5 dogs treated with 1 1abel, dose or in the 5 dogs receiving the label dose for 3 consecutive days. The current labeled dose (for treatment of various nematodes and cestodes but not Giardia sp.) of the combination given orally once reduces cyst excretion of Giardia-infected dogs, and should be considered for treatment of dogs shedding Giardia cysts, whether or not they have clinical signs of infection.
S. E. Barr, et al. Am J VetRed 59L 1998 in ISU VetMed, As reported in Veterinay News, August 2000, Pennsylvania State university, University Park, PA

Peregrine Comeback

In 1975 there were only 35 known nesting pairs of Peregrine Falcons. With a dedicated program of breeding these raptors in captivity through the cooperation of conservation groups, universities, government agencies and businesses with public support, there are now approximately 2000 pairs of these once endangered birds.
K.C. Roberts – May 2000

Headshaking in Horses

Headshaking is recognized as uncontrollable, persistent or intermittent, seasonal or nonseasonal, spontaneous and frequently repetitive vertical, horizontal or rotary movements of the head and neck. Other signs include nose rubbing, striking at the nose with the forelegs or head pressing or active avoidance of light, warmth or wind on the face. Most reports suggest that the condition is worse at exercise. Cases are classified as idiopathic, in the absence of defined etiological factors, after excluding dental problems, progressive ethmoidal hematoma, ear mites, allergic rhinitis or sinusitis.

Twenty mature horses with typical headshaking of 2 week to 7 year duration were studied. Clinical examinations included radiography of the head and nasopharyngeal endoscopy. All were assessed at rest and at exercise, both before and after fitting an occlusive nasal mask, application of tinted contact lenses and the perineural anesthesia of the infraorbital and posterior ethmoidal branches of the trigeminal nerve (PET). Of 17 cases in which bilateral PET blocks were performed, 11 (65%) showed a 90-100% improvement, 2 cases showed a 60-75% improvement and there was no effect in 4 cases.

Treatment regimens based on these results included 1) sclerosis of the posterior ethmoidal branch of the trigeminal nerve and 2) drug therapy. Bilateral sclerosis of PET was performed in 5 cases using 5 ml 10% phenol in almond oil. Headshaking was completely abolished in two of these cases; the effect lasting for 6 weeks. Three other cases showed a 90% improvement in clinical signs for 6-9 months, i. e., the benefits were temporary.

Cyproheptadine (Periactin) (CP) and/or carbamazepine (Tegretol) (CM) treatment was performed in 12 cases. Cyproheptadine is an anticholinergic sertonin antagonist and histamine (HI)-blocking agent. Carbamazepine is a sodium-channel-blocking, anticonvulsant drug. Most cases received a combination of CM and CP for an initial period of 10-20 days. CM was given at a dose of 4 mg/kg bwt 3-4 times daily. When combined with CM, the dose and frequency of CP varied between 0.2 and 0.5 mg/kg bwt, q. 12-24 hr. Cyproheptadine alone was ineffective. Seven cases treated with a combination of CM and CP with increasing doses and/or frequency of administration of the drugs showed 80-100% improvement within 3 or 4 days of instigation of treatment. One case showed only 50% improvement and a further one showed no benefit from a combination of CM and CP for 20 days. Carbamazopine alone was effective in 88% of cases but results were unpredictable at predefined dose rates.

Equine headshaking might be a trigeminal disorder consisting of neuralgia in which differing trigger mechanisms may explain the variety of headshaking movements. Seasonality is widely reported and may be due to the presence of"trigger factors," such as pollen grains, dust, an allergic response or vasomotor rhinitis. The sides of the nose are frequently rubbed, suggesting nasal cavity irritation orhypersensitivity. Exercise inevitably causes an increased nasal cavity blood supply, increased airfiow and turbulence in the ethmoidal region and an increase in the particulate matter within the nose. The authors postulate that hypersensitivity of the trigeminal nerve is involved in headshaking and that the clinical features of headshaking suggest involvement of the posterior ethmoidal/nasal branch of the ophthalmic division, rather than the infraorbital nerve. The positive response to carbamazopine, combined with the clinical features is consistent with involvement of the trigeminal nerve, particularly the more proximal branches such as the posterior ethmoidal nerve. In practice there is a realistic possibility of controlling but not curing headshaking with carbamazepine therapy at the present time. Some headshaking horses responded well to doses of 1.6-2.4 g (q. 6 hours) without apparent side effects.

Taken from: Newton, S. A., et al. Equine Vet J 32:208-216, 2000
As reported in VetMed Vol. 6 Issue 5 September 2000, Iowa State University, Ames, Iowa

Meningoencephalitis Secondary to Bacterial Otitis

A six-year-old, neutered male Golden retriever was first presented to the referring veterinarian 10 days prior to referral with chief complaints of ataxia and a mild right head tilt. Mild, bilateral otitis externa was also evident. Three days later, the dog was nonambulatory, with a severe left head tilt and resting nystagmus. Additional neurological abnormalities included lack of a palpebral or corneal reflex on the left side. One day prior to referral, the patient became febrile (106°F) and depressed.

At presentation to the Texas A&M University Veterinary Teaching Hospital, the patient was depressed and nonambulatory, with a severe left head tilt. The patient was in right lateral recumbency, and when placed in another other orientation, he would roll toward the left until he was again resting in right lateral recumbency. Rectal temperature was 1 03°F. The findings of a depressed mentation, multiple left-sided cranial nerve deficits, and proprioceptive deficits lateralized to the left were consistent with a left brain-stem lesion. A brainstem auditory-evoked response (BAER) test confirmed the presence of brain-stem disease, showing significantly increased latency in the peak I-V interval on both sides.
Significant hematological abnormalities included a mature neutrophilia and severe thrombocytopenia.

Empirical antibiotic therapy chosen was a combination of trimethoprim-sulfa (30 mg/kg, PO bid) and metronidazole (10 mg/kg, PO bid). Treatment with doxycycline was also continued in order to address the possibility of concurrent ehrlichial infection as the cause of the thrombocytopenia. A left ventral bulla osteotomy was performed on day nine of hospitalization. The patient was discharged from the hospital on day 14. At that time, he was ambulatory with a mild left head tilt, mild left proprioceptive deficits, and a weak left palpebral reflex. Antibiotic therapy was continued for a total of one month. On recheck examination 50 days after discharge from the TAMU-VTH, the patient was in good health.

The BAER is a simple and noninvasive test that may help to differentiate peripheral from CNS disease in cases where the neurological examination is inconclusive. Studies in canine patients have documented the utility of BAER in the localization of a variety of neurological lesions to the brain stem. In the patient of this report, the BAER confirmed the presence of intracranial disease. Cerebrospinal fluid analysis may identify changes consistent with infection, inflammation, or both, such as an increased white blood cell (WBC) count and increased total protein. Antibiotics chosen to address intracranial infection should ideally be bactericidal and should achieve therapeutic concentrations within the cerebrospinal fluid (CSF), regardless of the status of the blood-brain barrier. Examples of antibiotics that meet
these criteria include trimethoprim-sulfa, metronidazole, third-generation cephalosporins (e.g. cefotaxime), and imipenem. Surgical drainage of the middle ear via a ventral bulla osteotomy is also indicated once the patient's condition is sufficiently stable.
Taken from: Spangler, E. A., and C. W. Dewey J Am Anim Hosp Assoc 36:239-243, 2000, As reported in VetMed, Vol. 6, Issue 5, Sept. 2000, Iowa State University, Ames, Iowa

Our Daily Bread

Chaplin Dudley Boyd of Venture, Calif., my friend for 55 years, sent me some good advice. The author is unknown:
"All I ever need to know I learned from the Noah's Ark story: 1.Don't miss the boat. 2. Remember that we are all in the same boat. 3. Plan ahead. It wasn't raining when Noah built the Ark. 4. Stay fit. When you're 600 years od someone may ask you to do smething really big. 5. Don't listen to critics, just get on with the job that needs to be done. 6. Build your future on high ground. 7. We were meant to travel in pairs. It was plannned that way. 8. Speed isn't everything. The snails were on board with the cheetahs. 9. When you are stressed, float awhile. 10. Remember the Ark was built by amateurs, the Titanic by professionals. 11. No matter what the storm, when you are with God there's always a rainbow waiting."
The Rev. A.P. Bailey

Opportunities in Continuing Education
Fall 2000

Date	Topic	Location	Contact Hours
Sept. 22 &23	Introductory Echocardiography	Blacksburg	10
Sept.29 & 30	Orthopedic Surgery of Canine Hindlimb	Blacksburg	14
Oct. 6, 7 & 8	Advanced Echocardiography	Blacksburg	21
Oct. 20 & 21	Applied Echocardiography	Blacksburg	10
Nov. 10 & 11	Applied Echocardiography	Blacksburg	10
Nov. 17 & 18	Diagnostic Ultrasonography	Blacksburg	10
Dec. 8 & 9	Introductory Echocardiography	Blacksburg	10
Dec. 4 – 8	Intensive Orthopedic Series	Blacksburg	38

Please note: The courses listed above are limited enrollment and feature a hands-on laboratory experience under the guidance of clinical faculty members. Program brochures provide course details. For registration or more information, please contact: **Dr. J.M. Bowen**, VMRCVM – Virginia Tech, Blacksburg, VA 24061, (540) 231-5261; or **Conference Registration**, Continuing Education Center, (540) 231-5182.

A Message from the VTH Director

This new century is very positive for veterinarians as the demand for the healthcare services provided for companion animals is strong. The Veterinary Teaching Hospital experiences direct benefit from these demands, but it finds itself in an occasional conflict between its mission objectives of teaching and service. We have followed the trends in our caseload over the past ten years and find we are providing more diagnostic, therapeutic, and nursing care activities per patient in both large and small animal services than ever before. Small Animal Medicine and Specialty Medicine (Dermatology, Cardiology, Neurology) sections have seen unparalleled increases in their caseload numbers as well as patient care activities per patient. Even with a 40% increase in caseload numbers, the faculty, residents, and interns have been able to maintain a timely scheduling of cases into an appointment slot within five days of requested referrals for just about every circumstance.

The caseload in Small Animal Surgery, on the other hand, has remained consistent from year to year as the section functions at near capacity to meet caseload demands, particularly in orthopedic surgery. Though we are able to schedule most emergency cases regardless of the number of non-emergency appointments that are filled, the section experiences difficulty in providing timely service for its non-emergency orthopedic cases. Lameness evaluations and surgery for hip and stifle diseases are delayed by weeks in many instances. How can this be?

Training veterinary students, interns, and residents is an inefficient process that frequently conflicts with the ability to provide more timely appointments when demands for quality surgical care are high. Cases managed by the surgical service typically utilize more of the total hospital resources per patient, involving students who rotate through the various support services such in anesthesiology and radiology. Yet, the fact remains that there are more requests for referral services for non-emergency orthopedic cases than can be met by the service's appointment schedule. Although this might be viewed as a good problem to have, it remains a problem nonetheless. We try diligently to address the untimely appointment schedule for orthopedic non-emergencies but find ourselves asking for understanding and patience from our faithful referring colleagues that utilize our hospital as their primary referral center. We will continue to ask your understanding in this specific area of our Teaching Hospital service. – **Robert A. Martin, DVM, MS, DACVS; Teaching Hospital Director, VMRCVM, Virginia Tech, Blacksburg, VA.**

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

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Dr. W. Palmer	-	Extension Specialist - Equine
Dr. E. Hovingh	-	Extension Specialist - Dairy & Small Ruminants
Dr. K. Pelzer	-	Extension Specialist - Small Ruminant
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Dr. Will Hueston	-	Extension Specialist - Animal Health Policy
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