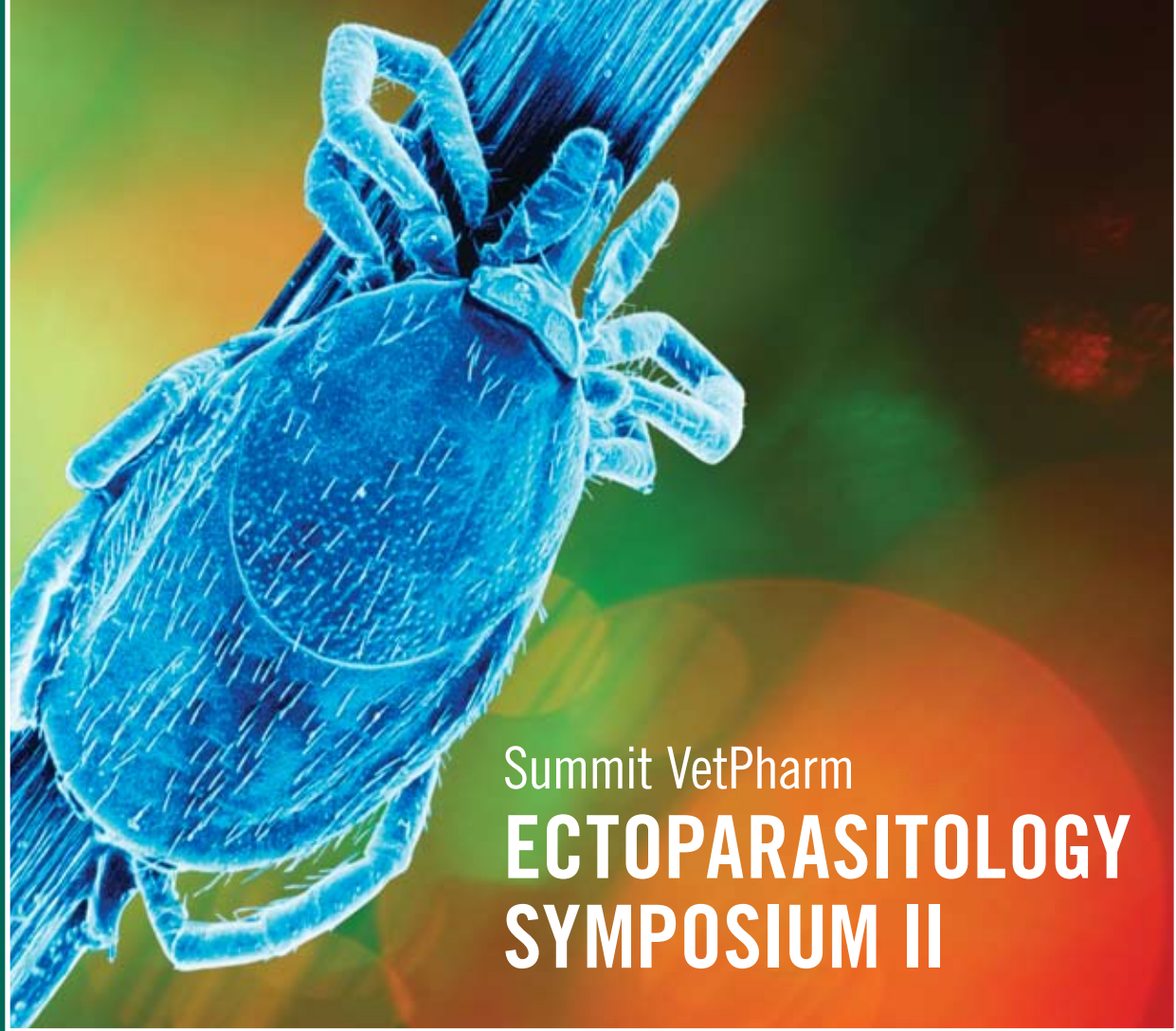


Summit VetPharm

ECTOPARASITOLOGY SYMPOSIUM II

FOUR PERSPECTIVES ON HOW TO PROTECT
OUR PATIENTS AND PRACTICES WITH
ADVANCED PARASITE CONTROL



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**ECTOPARASITOLOGY
SYMPOSIUM II**

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Article 1 – New Strategies for Control of Fleas, Ticks and Vector-Borne Diseases

Byron L. Blagburn, PhD, Distinguished University Professor, Auburn University School of Veterinary Medicine, Auburn, Ala.

Article 2 – Keeping Ectoparasite Control in the Veterinary Practice

Steven A. Levy, VMD, Veterinary Clinical and Consulting Services, Kansas City, Mo.

Article 3 – Flea Allergy Dermatitis: New Tools for Control

Dawn Logas DVM, DACVD, Veterinary Dermatology Center, Maitland, Fla.

**Article 4 – How Veterinary-Exclusive Products Will Help Build Your Practice
and Keep Your Door Swinging.**

Louise Dunn, Snowgoose Veterinary Management Consulting, Greensboro, NC.

New Strategies for Control of Fleas, Ticks and Vector-Borne Diseases

Byron L. Blagburn, Distinguished University Professor
College of Veterinary Medicine, Auburn University

Fleas, ticks and mosquitoes are common primary disease agents and vectors for important human and companion animal diseases. They transmit primary pathogens among reservoirs (hosts that serve as a means of sustaining an infectious agent) and deliver agents from reservoir populations to companion animals or humans. Mosquitoes are primary irritants and important vectors for heartworm disease and West Nile virus. Insecticides with repellency properties are helpful in preventing flea, tick and mosquito attachment and feeding.

Fleas (*Ctenocephalides felis*) are vectors for several potential human and companion animal pathogens:

- ▼ *Rickettsia typhi*
- ▼ *Bartonella henselae*, *B. clarridgeiae*
- ▼ *Rickettsia felis*
- ▼ *Dipylidium caninum*
- ▼ Hemotropic mycoplasmas (hemoplasmas)
- ▼ Intermediate hosts for *Dipylidium caninum* and *Acanthocheilonema (Dipetalonema) reconditum*

*The hemotropic mycoplasmas may cause anemia, depression, anorexia, weight loss, pale mucous membranes, icterus, and/or splenomegaly in cats. Diagnosis is confirmed using microscopy or PCR. Serology is not yet available for mycoplasmas. Treatment consists of doxycycline at 5 mg/kg PO q 12 hrs for 21 days.



In a study by Se *et al.*, (2004), fleas recovered from dogs (D) and cats (C) were examined for potential pathogens. Results were as follows:

- ▼ *Rickettsia felis*: 23% (C); 13% (D)
- ▼ *Bartonella henselae*: 22% (C)
- ▼ Hemoplasmas, (formerly *Hemobartonella* spp.): 49% (C); 16% (D) *Mycoplasma haemocanis*, *M. haemofelis*, *Candidatus M. haemominutum*
- ▼ Multiple agents: 36% (C); 6% (D)

Fleas are difficult to control because the majority of stages (approximately 95 percent) reside off the host as eggs, larvae and pupae. Host-targeted adulticides remove only adult fleas from infested pets. A combination of host-targeted adulticides and IGRs, combined with proper environmental strategies, can reduce the time period necessary to eliminate fleas.

Below is an algorithm demonstrating the synergistic effects of host-target adulticides and IGRs in a pet-directed integrated flea control strategy.

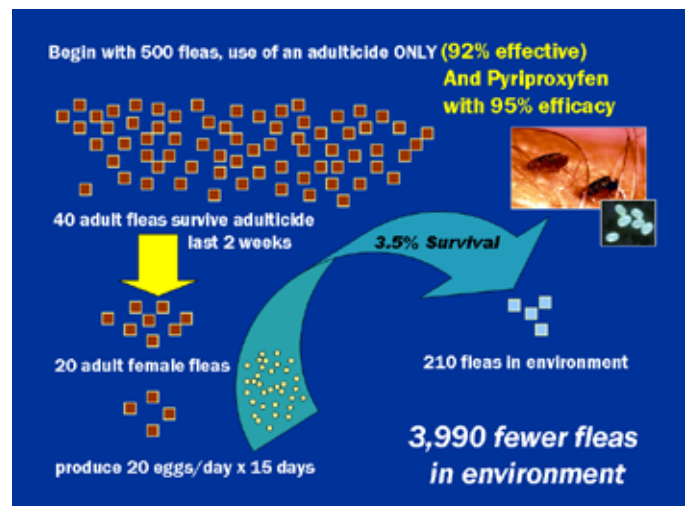
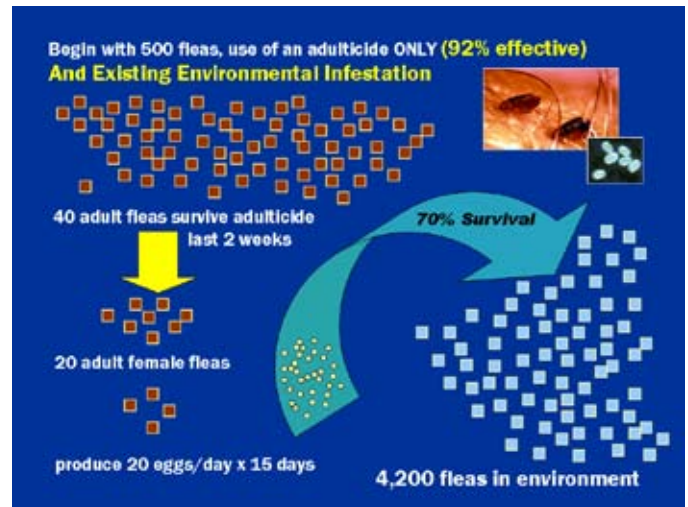


Table 1: Human Tick-Borne Diseases

Disease	Organism	Vector	Region
Lyme Disease	<i>Borrelia burgdorferi</i>	<i>I. scapularis, I. pacificus</i>	NE, MW, MA, W
Rocky Mountain Spotted Fever	<i>Rickettsia rickettsii</i>	<i>D. variabilis, D. andersoni, R. sanguineus</i>	E,S,W
Babesiosis	<i>B. microti, B. equi</i>	<i>I. scapularis, I. pacificus</i>	NE, W
Ehrlichiosis	<i>E. chaffeensis, E. canis, E. ewingi, A. phagocytophilum</i>	<i>D. variabilis, A. americanum, I. scapularis, I. pacificus</i>	Widespread
Relapsing Fever	<i>Borrelia</i> spp.	<i>Ornithodoros</i> spp.	W
Colorado Tick Fever	<i>Coltivirus</i>	<i>D. andersoni</i>	W
Tularemia	<i>F. tularensis</i>	<i>A. americanum, D. andersoni, D. variabilis</i>	SE, SC, W (widespread)
Tick Paralysis	<i>Toxin</i>	<i>D. andersoni, D. variabilis</i>	E, W

Table 2: Companion Animal Tick-Borne Diseases

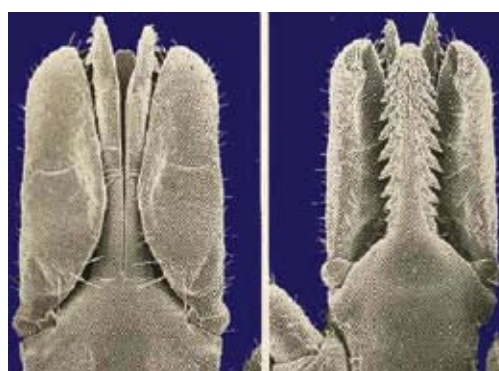
Disease	Organism	Vector	Region
Lyme Disease	<i>Borrelia burgdorferi</i>	<i>I. scapularis, I. pacificus</i>	NE, MW, MA, W
Rocky Mountain Spotted Fever	<i>Rickettsia rickettsii</i>	<i>D. variabilis, D. andersoni, R. sanguineus</i>	E,S,W
Babesiosis	<i>B. canis, B. gibsoni, B. conradae, B. annae</i>	<i>R. sanguineus</i>	Widespread
Ehrlichiosis	<i>Ehrlichia</i> spp. (<i>Anaplasma</i> spp.)	<i>R. sanguineus, Ixodes</i> spp., <i>Amblyomma</i> spp.	Widespread
Cytauxzoonosis	<i>C. felis</i>	<i>D. variabilis, A. americanum</i>	MW, SE
Hepatozoonosis	<i>H. americanum</i>	<i>A. maculatum</i>	SE
Tick Paralysis	<i>Toxin</i>	<i>D. andersoni, D. variabilis</i>	E, W

Ticks transmit more pathogens in North America than any other arthropod. Of the more than 850 tick species, about 80 species are of medical importance. Ticks may transmit viruses, bacteria and protozoa; many produce paralytic neurotoxins. Ticks are competent vectors because they feed on many hosts, require large blood meals, and feed for long periods of time. All of these feeding attributes increase their likelihood of ingesting pathogens and transmitting them to susceptible hosts. Tables 1 and 2 on page 4 identify many common tick-borne diseases of humans and companion animals.

NOTE: Both vectors and diseases are similar in humans and animals. Disease agents are not transmitted directly from animals to humans. Both humans and animals acquire these agents by frequenting tick-infested environments. Dogs are effective sentinels for tick-borne diseases. Because of their smaller size, dogs are at greater risk of encountering questing ticks.

A number of rickettsial agents have either been renamed or their taxonomic affinities realigned, based on genomic sequence comparisons. These name changes and genetic groupings are summarized below.

Mechanisms of tick feeding and the components of the saliva enable ticks to effectively transmit pathogens. Ticks search for an attachment site, lacerate the skin with the sharp chelicerae, and insert the hypostome (anchor). Many ticks produce a glue-like substance called cementum to assure that they remain tenaciously attached. An effective salivary pharmacopoeia of bioactive molecules aids in attachment to the host, and enables pathogens to replicate and disseminate in the host.



A complex of integrated attachment and anchoring devices comprise the tick capitulum (head).

Tick salivary secretions contain 18 or more enzymes, two enzyme inhibitors, and nine or more additional bioactive molecules. Important components of tick saliva that enable ticks to alter host responses are calreticulin, IgG-binding protein, Interleukin 2-binding proteins, histamine binding proteins, anti-complement proteins, and compounds that inhibit T-cell proliferation. Prevention of transmission of vector-borne disease can be a challenge given the brief periods necessary for movement of organisms from vectors to hosts.

Current Taxonomy of Ehrlichial Agents		
Genotype	Cell Type Infected	Vector (North America)
I <i>E. canis</i> <i>E. chaffeensis</i> <i>E. ewingi</i>	MNC* MNC GC**	RS AA, DV AA
II <i>Anaplasma phagocytophilum***</i> <i>A. platys</i>	GC Platelet	<i>Ixodes</i> spp. RS
III <i>Neorickettsia risticii</i> <i>N. helminthoeca</i>	MNC MNC	Arthropods Flukes

*MNC=Monocyte; **GC=Granulocyte;
 ***Formerly *E. equi*, *E. phagocytophila*, HGE Agent
 RS=*Rhipicephalus sanguineus*
 AA=*Amblyomma americanum*
 DV=*Dermacentor variabilis*

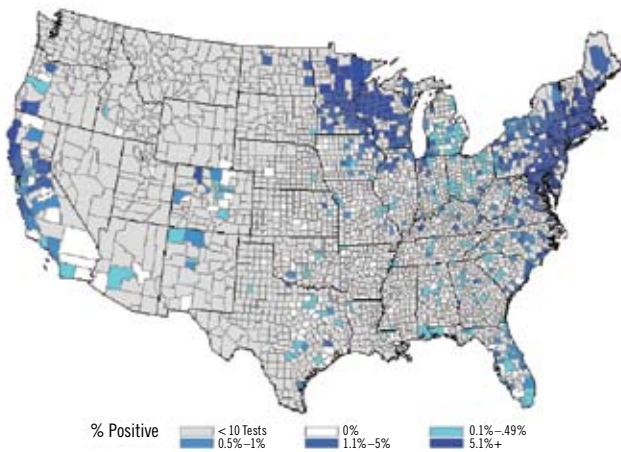
Transmission Times for Tick-transmitted Agents	
<i>Borrelia burgdorferi</i>	16 hr or less
<i>Rickettsia</i> spp.	5-20 hr
<i>Anaplasma</i> spp.	4 hr or more
<i>Ehrlichia</i> spp.	6-24 hr
<i>Babesia</i> spp.	48 hr or more

Ticks transmit infectious agents in one of three ways. Transtadial transmission occurs when one stage (i.e. the larva or the nymph) acquires the agent and transmits it after molting to the next stage. For example, agents acquired by larvae are transmitted to a new host by nymphs after the developmental molt. The same is true of agent acquisition by nymphs and transmission by adults. Most tick-borne agents are transmitted in this way. Transovarial transmission usually occurs in one-host ticks, although it can occur in two- or three-host ticks. Female ticks take up the infectious agent and incorporate it into their eggs. Larvae, or later stages, of the next generation then pass the organism when they feed. A third and less

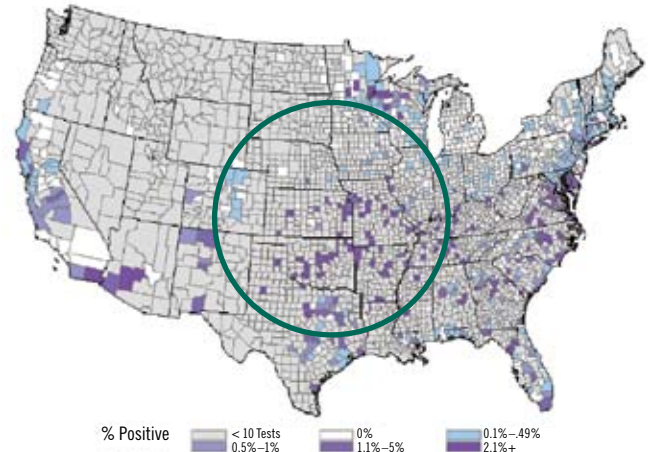
common mode of transmission is intrastadial transmission, in which transmission occurs during the same stage of tick development. Intrastadial transmission usually occurs during interrupted feeding, and has been demonstrated for *Ehrlichia canis* infections in dogs.

The distribution of vector-borne diseases is determined by species and abundance of vector ticks, species and abundance of reservoir hosts, and the potential for interactions of humans or companion animals with ticks. As illustrated in the following maps below, Lyme borreliosis and anaplasmosis enjoy a Northeastern, upper-Midwest and Western distribution.

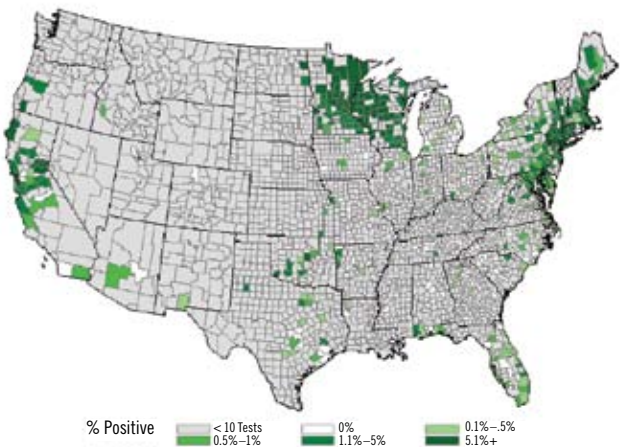
Prevalence of *Borrelia burgdorferi* by county



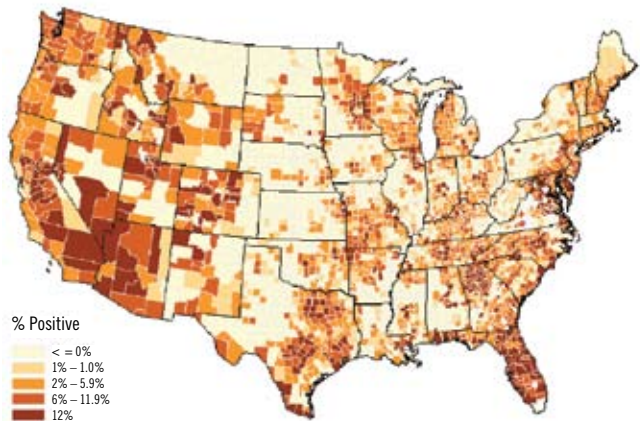
Prevalence of *Ehrlichia canis* by county



Prevalence of *Anaplasma phagocytophilum* by county



Percent population growth by county



Map visuals courtesy of IDEXX

This is due principally to the abundance of *Ixodes scapularis* in the East and Midwest and *I. pacificus* in the West. The distribution of *Ehrlichia canis* is more cosmopolitan, due to the ubiquitous presence of the vector tick, *Rhipicephalus sanguineus*. The focus of ehrlichiosis in the central United States (note the circle) may be due

to cross-detection of *E. chaffeensis* using the Snap 3DX or 4DX platform. Geographic shifts in the human population are likely to result in increased diagnosis of vector-borne diseases in dogs or cats in regions where agents were at one time rare or not present at all.

Treatment of Selected Vector-Borne Diseases

Disease	Agent	Clinical Signs	Diagnosis	Treatment
Lyme borreliosis	<i>Borrelia burgdorferi</i> (sensu stricto)	<ul style="list-style-type: none"> Anorexia, malaise, intermittent lameness Protein uremia CNS disease 	<ul style="list-style-type: none"> Culture ELISA; WB ELISA; Snap 3DX and 4DX 	<ul style="list-style-type: none"> Doxycycline 5 mg/kg (orally) twice daily for 28 days 10 mg/kg (orally) once daily for 28 days Tetracycline 22 mg/kg (orally) three times daily for 28 days Amoxicillin 20 mg/kg (orally) three times daily for 28 days Chloramphenicol 25-50 mg/kg (orally) three times daily for 28 days
Ehrlichiosis/ Anaplasmosis	<i>E. canis</i> , <i>E. chaffeensis</i> , <i>E. ewingi</i> , <i>A. phagocytophilum</i> , <i>A. platys</i>	<ul style="list-style-type: none"> Fever, lethargy, anorexia, weight loss, vomiting Lymphadenopathy, arthritis (esp, <i>E. ewingi</i>), uveitis Bleeding Thrombocytopenia, non-regenerative anemia (only occasionally 2° IMHA) 	<ul style="list-style-type: none"> Serology (acute: 4X change in 3-4 weeks; chronic: > 1:80) ELISA: Snap 3DX and 4DX Microscopy morula in blood smear (acute phase only) PCR (helpful when serology is negative and patient does not respond to therapy) 	<ul style="list-style-type: none"> Doxycycline 10 mg/kg (orally) once daily for 2-3 weeks Tetracycline, minocycline and chloramphenicol
<i>Bartonella</i> spp.	<i>Bartonella vinsonii</i> (subsp. <i>berkhoffi</i>), <i>Bartonella henselae</i> (20 – 60% of cats are seropositive) <i>B. clarridgeiae</i> , <i>B. elizabethae</i> *Transmitted by fleas and ticks	<ul style="list-style-type: none"> Dogs – endocarditis, granulomatous disease, liver disease, vasculitis, lameness (arthritis), lethargy, weakness, respiratory signs, collapse, murmur (heart failure) Cats – Stomatitis, lymphadenopathy (role of FIV) 	<ul style="list-style-type: none"> Culture Serology PCR 	<ul style="list-style-type: none"> Azithromycin (5-10 mg/kg PO q24 X 5; q48 X 45 days)
Canine babesiosis	<i>Babesia canis vogeli</i> , <i>Babesia gibsoni</i> , <i>Babesia conradae</i>	<ul style="list-style-type: none"> Anemia Thrombocytopenia (looks like IMHA; >85% Coombs +) Often < 50,000 plt/ul Hyperglobulinemia 	<ul style="list-style-type: none"> Microscopy (capillary blood) Serology (>1:64) PCR 	<ul style="list-style-type: none"> Imidacarb dipropionate (Imizol – 6.6 mg/kg; repeat in 14 days) Atovaquone (Mepron – 13.5 mg/kg orally TID with meal) Azithromycin (Zithromax 10 mg/kg PO q24 both X 10 days) Serology (8 weeks post RX)

Diagnosis of vector-borne diseases is based on one or more positive tests. Historical diagnostic strategies included culture of the organism, indirect fluorescent antibody tests (IFAT), enzyme-linked immunosorbent assays (ELISA), Western immunoblot, and polymerase chain reaction (PCR). IFAT and ELISA tests often capture many antibodies, leading to possible cross-reactions with antigens produced by the host or non-target organisms (lack of specificity). Consequently, Western blot was a necessary follow-up to both IFAT and ELISA tests to confirm specificity. PCR is both sensitive and specific because it detects specific segments of organismal DNA. Snap 3DX or Snap 4DX (IDEXX, Westbrook, Maine) eliminate the need for follow-up Western blot tests, because of their use of specific proteins. However, it is important to remember that a positive serologic test may not confirm that presenting signs are caused by the detected organism. All symptomatic animals should receive a comprehensive diagnostic workup to either rule out or confirm a pending serologic diagnosis.

Control of ticks and tick-borne diseases:

- ▼ Host-targeted insecticides/acaricides (use products year-round as per CAPC guidelines)
 - K9 Advantix® (imidacloprid/permethrin)
 - FRONTLINE® Plus (fipronil/methoprene)*
 - FRONTLINE® Spray® (fipronil)
 - Preventic® Collar (amitraz)
 - ProMeris™ for Dogs (metaflumizone/amitraz)
 - Vectra 3D™ (dinotefuran/permethrin/pyriproxyfen)*

*Combinations of adulticides and IGRs may enhance flea control and aid in the deterrence of resistance.

- ▼ Knowledge of tick habits and behavior, including tick avoidance strategies
- ▼ Vaccination (Lyme disease)

Summary

Fleas, ticks and mosquitoes are common vectors of diseases worldwide. Fleas are increasingly important as transmitters of *Bartonella henselae*, *Rickettsia felis*, hemotropic mycoplasmas, tapeworms and filarids. Despite common perception, ticks are more prevalent vectors of animal and human diseases than mosquitoes in North America and Eurasia.

Ticks are particularly well equipped to transmit disease agents because of their tenacious attachment mechanisms, feeding habits, and their capability to alter host coagulation, inflammatory and immune responses. Consequently, transmission of certain organisms (i.e., *rickettsiae*) can occur in as little as four hours.

Important tick-transmitted agents include *Borrelia burgdorferi*, *Ehrlichia* spp., *Anaplasma* spp., Rocky Mountain spotted fever, *Hepatozoon americanum*, and *Cytauxzoon felis*. *Borrelia burgdorferi* possesses survival and host modulatory capabilities via its production of unique outer-surface proteins and stimulation of tick salivary proteins. These molecules provide developmental cues in the tick mid-gut and salivary glands, and protect organisms from immune destruction after introduction into the vertebrate host.

Flea control strategies include the use of host target adulticides and/or IGR compounds. The combination of adulticides and IGRs has the advantages of improved efficacy and deterrence of resistance. Successful control of ticks and prevention of tick-borne diseases should employ tick avoidance strategies, compliant use of host-targeted acaricides, and vaccination for *B. burgdorferi*. Rapid transmission of bacterial agents requires the use of agents that repel ticks, exert their effects quickly, or both.

Se et al., *Veterinary Microbiology*, 102:183-188, 2004
 Owen, D. C., *Medical Hypothesis*, 67:4, 860-864, 2006
 Breitschwerdt, E., *Proceeding 24th Annual ACVIM*, 2006

ARTICLE 2

Keeping Ectoparasite Control in the Veterinary Practice

Steven A. Levy, VMD
 Veterinary Clinical and Consulting Services, Kansas City, Mo.

Our greatest asset in the quest to keep ectoparasite product sales in our practice is the bond of trust and recognition that clients can develop with the veterinary healthcare team. Every consumer wants to be treated fairly—even as someone special. The perfect example of the value a consumer places on this type of status is seen in the multitude of loyalty campaigns used by airlines, car rental groups, retailers, hotels and others.

Several years ago, I received a Marriott Silver Rewards membership after I spent 10 nights in their hotels in one year. The membership gave me a special Silver Elite reservation number to call. When I made my first call, the voice prompt system answered and I heard, “If you are a Gold Elite member press 1; if you are a Silver Elite member press 2.” My immediate reaction was to ask myself, “How do I get to be a Gold Elite member?”

Building Client Loyalty

We can make all of our clients feel like Gold Elite members of our practice family. The front office staff can look at the appointment schedule and be prepared to recognize each client and pet by name. Many of your best clients become friends with your staff and feel very comfortable talking to them.

I owned a practice for 30 years and learned that loyalty is a two-way street and there are benefits for all. We built client loyalty by being friendly and responsive. We made follow-up calls to clients. We got to know them and their pets very well, and we really cared about them. We decided we wanted to provide the best care, set about determining what options were best, and created a culture of commitment to these modalities and products. We avoided the tendency to be tentative by becoming experts, and shared our expertise through client education.

Dispensing ectoparasiticides in competition with OTC and Internet sources can be all about the cost if you don't make it all about the client-veterinarian-pet relationship. If your clients think you have their best interests at heart, if you've been fair to them (and yourself) in pricing your services and goods, then they may not even seek competitive prices on these items. When a client does present a competitive Internet or OTC product, speak to them about the source, authenticity, and handling of the product. Be sure you let them know that you stand behind the veterinarian-exclusive product, its efficacy and safety because the manufacturer stands behind you. Tell them that an anti-diversion agreement exists between you, the veterinarian and manufacturer to protect their pets. Factor the free goods incentives you can provide into the final price, and have a set hospital policy on how to deal with a price lower than yours.

Become A Flea and Tick Expert

By the time a client reaches the front desk at the end of a visit they should have been provided service and education that allows them to be comfortable with what you have to offer. In my practice, when all of these things were done, the price question often boiled down to a client's decision to purchase the product from us rather than save a few dollars with a stranger. We had become a trusted source, giving our clients elite service, and they maintained their loyalty to us. Set yourself above the third-party sellers with care and education. Become flea and tick experts, and share your knowledge and confidence in the products.

Integrated Flea and Tick Control for Dogs and Cats

If we are to achieve high client compliance in flea and tick control programs, the products we dispense must be safe, effective and easy to use. Pet owners must perceive success in controlling these ectoparasites, and the veterinary healthcare team must take time to explain proper use and appropriate expectations for results. Spot-on products that kill ticks, stop the development of immature fleas, and kill adult fleas can meet these criteria. Choice of acaricide must be based on rapid action, clinical repellence, and safety in either species. A decision to use premise treatment will depend upon the severity of the flea infestation, owner expectations, and owner willingness to purchase and use products.

The fastest-acting acaricidal products are not safe for use in cats. The veterinary healthcare team must take care in choosing a combination flea and tick product for use in cats. Use of the fastest-acting acaricides on dogs, in homes in which cats are co-housed, has not been a major problem. These acaricides are topical products and not intended for oral use. Toxicity in cats has been reported when owners have inappropriately treated cats with canine products. Cats become ill when they groom the canine product off their coats. If a cat is inadvertently treated with a canine product, the cat should be washed with liquid Dawn® dish soap to strip the acaricide and oily secretions containing the product from the cat's coat. An Elizabethan collar should be applied to prevent licking, and specific antidotes should be used, based on the clinical signs and product used.

Tick Control as a Means of Controlling Tick-borne Diseases

Any period of feeding by infected vector ticks creates a risk for transmission of tick-borne organisms. To be effective in preventing organism transmission, acaricidal products must prevent attachment and feeding. Rapidly acting neurotoxic acaricides may achieve clinical

repellence. This phenomenon leads to interruption of the pathogen-tick-dog cycle, and ticks that cannot feed do not infect the dogs. Additionally, these ticks cannot obtain the necessary nutrition for egg production. Finally, no second host is at risk from a tick that is dead or moribund. Some acaricides have the additional property of expellency that results in attached ticks detaching and leaving the host, while others have the ability to repel ticks and mosquitoes. Heavy tick pressures may result in some ticks attached to a dog, but this outcome must be compared to the number of ticks on the dog if no acaricide was used.

Strategies for Keeping Ectoparasite Control in the Veterinary Practice

The veterinary healthcare team has a major role in helping clients choose the appropriate ectoparasite products for their pets. We have an obligation to lead our clients to a suitable decision on how to protect their pets, family members, and home from infestations and diseases carried by these parasites. The tool to help clients make the proper choice is education. During the first contact at the reception desk, clients should be asked to verify they are using ectoparasite control for their pets. Receptionists can distribute literature describing appropriate products and their use, and then room technicians and veterinarians can follow-up during the office examination.

What better time to discuss tick control than when performing tests for tick-borne infections? What better time to discuss flea control than when examining the pet's coat for fleas, flea dirt or FAD? It has been my observation that the most successful veterinarians and their staff are great communicators and educators. While we're performing the physical activities of the examination, treatments, testing and immunizing, we have a great opportunity to engage the clients in an educational dialogue. Every treatment for tapeworm should include a discussion of the routes of acquiring this infection and the role of effective flea control in its prevention.

Upon checking-out at the front desk, all clients should be presented with the ectoparasite products the veterinarian has chosen for their pets. A clear hospital policy on what products to use should be based on evaluation of efficacy and safety, and instilled as a core belief about what is best for the patients and their families. If we believe in what we recommend to our clients then our clients will share that confidence.

Educating ourselves is the first step in preparing to educate our clients. Only the veterinary healthcare team can offer a real live person to educate and guide clients in their choices. Seize the moment while pet owners are in your practice and be affirmative in offering ectoparasiticides by saying, “We recommend flea and tick control for your pet now, and this is what the doctor would like you to use.” Don’t let clients leave your sphere of influence without an attempt to educate them three times:

- ▼ First, upon arrival at the reception desk
- ▼ Second, in the examination room
- ▼ Third, when they are checking-out

Summary

In the difficult economic time we’re facing, we have a unique opportunity to place ourselves ahead of non-veterinary providers of ectoparasiticides by providing exceptional care for our clients’ pets. Our best clients treat their pets like members of the family, and most wish they could get the personal care we provide for their pets for themselves. Use your knowledge as a veterinarian to develop a comprehensive program of ectoparasite control for your patients, and then communicate that program to your staff. Educate your clients, show them you’ve made a commitment to products that are restricted to distribution only through veterinarians, and set a goal of being the provider of these products for your pet families. The bond of trust between your veterinary staff and pet owners can be one of your most important tools in keeping ectoparasite control under your control.

ARTICLE 3

Flea Allergy Dermatitis: New Tools for Control

*Dawn Logas DVM, DACVD
Veterinary Dermatology Center, Maitland, Fla.*

Many times, veterinarians forget about fleas, however, flea allergy dermatitis (FAD) is still one of the most common diagnoses I make as a dermatologist. Dogs with FAD are miserable, and there are some critical steps that need to be taken to help these pets and their owners.

Start With A Clear Diagnosis

History

Be sure to get an accurate picture of specific factors that could be influencing the pet's condition.

- ▼ Fleas in the environment
- ▼ Other pets with fleas
- ▼ Indoor/outdoor cats
- ▼ Exposure to many other pets
- ▼ Flea control program
- ▼ Presence of fleas or flea dirt

Visual Signs

Examine the pet and take a close look at the signs presented.



Clinical Signs of FAD: Example 2



Untreated FAD

If left untreated, the dogs will continue to have dermatologic symptoms of pruritus, odor, and hair loss, even if the fleas are removed. So if you suspect bacterial or yeast dermatitis, then treat for it along with the fleas.

Confirm Diagnosis

- ▼ Intradermal skin testing
- ▼ Complete flea control



Clinical Signs of FAD: Example 1

How can we achieve complete flea control?

To protect patients from fleas, we must prevent fleas from feeding as much as possible. This may sound simple but, unfortunately, it's not. Perhaps that's why we still face flea problems, in spite of so many products now available to treat fleas on our patients. Other causes of flea problems include:

- ▼ Unrealistic expectations of client (and sometimes, ourselves)
- ▼ Lack of client education about the flea life cycle
- ▼ Inappropriate use of topical flea products
- ▼ No environmental control
- ▼ Resistance of fleas to current products

How can we handle unrealistic expectations?

It's important to make time to educate our clients on the basic facts about fleas, their life cycles, and the risks they pose. It's equally important to help them understand facts about flea control products.

- ▼ Flea kill is NOT instantaneous.
- ▼ None of the products are 100% effective all month for every strain of fleas.
- ▼ It may take weeks to months to get a severe flea infestation under control.
- ▼ The kill time may increase and kill percentage decrease between applications.

Lack of client education about the flea life cycle.

Clients need to understand that the flea problem exists mostly in the pet's environment. The existing adult fleas they see are only a small fraction of the entire flea population in their environment.

An adult flea starts to feed within 10 minutes, and begins to lay eggs within 24 to 48 hours of feeding. The number of eggs in one month can add up to 300 per female flea. If a product is 98% effective through the month and decreases egg production by 90% this would leave four eggs times 30 days. Emergence of new adults occurs within one to two weeks, or up to four to six months or longer depending on the environmental conditions.

Product	Speed of Kill	At 30 days the percentage killed at 24 hours
Advantage ^{®1}	100% by 12 hours	98 – 100%
FRONTLINE [®] Plus ²	100% by 24 hours	90 – 100%
Vectra 3D^{™3}	98 – 100% by 6 hours	92 – 100%
ProMeris ^{™4}	95% by 24 hours	> 95 %
Revolution ^{®5}	74% by 8 hours	81 – 100%
CAPSTAR ^{®6}	100% by 3 hours	N/A
Comfortis ^{™7}	100% by 4 hours	97 – 100%

Product	Bathing or Swimming Percentage kill after 30 days	When to apply after bathing	Insect Growth Regulator (IGR) Stable in Sunlight
Advantage ^{®1}	88.8 – 92.2%	Once the pet is dry	No IGR
FRONTLINE [®] Plus ²	>99%*, 60 – 85%**	2 to 3 days before or after a bath	No
Vectra 3D^{™3}	90%	Once the pet is dry	Yes
ProMeris ^{®4}	90%	Before bathing just not immediately before	No IGR
Revolution ^{®5}	92%	Once the pet is dry	No IGR
CAPSTAR ^{®6}	N/A	N/A	N/A
Comfortis ^{™7}	N/A	N/A	N/A

*Water immersion up to Day 31 with weekly water immersion

**Percent of dogs flea free Day 1 to 29 with weekly shampooing

This delay can occur in pupae that are in or outdoors. With a population of 500 or 1,000 fleas, there is a risk for unrealistic expectations because no product sets up an impermeable barrier that prevents new fleas from jumping onto a pet.

Inappropriate use of topical flea products.

Clients need correct instructions on how and when to apply flea control products. They need to know if bathing or swimming affects topical products. Only oral products are not affected by swimming or bathing. They also need to be aware that not all products will maintain efficacy in dogs that are outside in the sunlight for most of the month.

Another problem with clients and flea treatments is that many pets are not being treated on a monthly basis. Clients may think they only need to apply flea products in the summer.

They may believe there are no fleas in winter so their pets must not have fleas. Many clients only treat when they see fleas, and some will tell you they don't like to use insecticides, so they only use it once or twice a year. Some clients may not be using an appropriate dose for the pet, or they may not be treating all the pets in the household.

Since most clients do not know or understand the flea life cycle, they have inappropriate or no environmental control in the home or yard. They don't understand fleas can come from many sources in the outside world.

- ▼ Visits to the doggy day care or dog park on a regular basis
- ▼ Visits to the groomer
- ▼ Visits to the kennel
- ▼ Exposure to other animals

How can we help our clients?

First, we must take the time to educate the client and explain the flea life cycle. Adult fleas represent only a small part of the life cycle. The other stages in the environment must be eliminated or controlled to prevent an infestation.

Spot-on products containing insect growth regulators (IGRs) can be beneficial for pets in the house, particularly if the product has ovicidal and larvicidal activity. Different active ingredients have advantages and drawbacks. For example:

- ▼ Borates are highly toxic to insects and work by desiccation.
- ▼ Lufenuron inhibits the development of insects and kills immature stages of fleas.
- ▼ Methoprene breaks down with sunlight.
- ▼ Pyriproxyfen is stable in sunlight.

Additional Risks in the Yard

- ▼ Exposure to other animals outside increases exposure to fleas.
- ▼ Fleas like 65° to 80° F and 70 to 90% relative humidity.
- ▼ Pets have greater access to cool, dark and damp places, where fleas tend to flourish.
- ▼ Leaf litter can be a breeding ground for fleas.

Environmental Flea Control Tips for Clients

Consider starting with a questionnaire that your clients fill out about their dog's habits, environment, and what they currently do for flea control. Then, give them a handout of the flea life cycle that explains how to treat the pet and the environment for flea control. Train staff members to help with or lead this initiative. The key is to provide clients with advice that covers flea control inside and out.

For the House

1. Vacuum prior to any treatment method; a vacuum with a beater bar is best.

2. Consider hiring a professional exterminator service.

- ▼ These tend to be less labor intensive and can work very well; a good pest control operator will work with them to combat the flea problem. Ask questions.
- ▼ Let them know if they have a flea allergic pet.
- ▼ If they have more than 50% carpeting in their home, consider a service that embeds a borate-like compound into their carpets. Such companies often have a 1-year service guarantee. Good to excellent results have been obtained with these services.
- ▼ Other exterminator services will spray their home at regular intervals. Consider the use of an insect growth regulator (IGR) such as methoprene (Precor) or pyriproxyfen (Nylar). Discuss with their exterminator the time interval of treatments for their home.

3. Do it themselves – and follow instruction labels carefully.

- ▼ Concentrate under and in furniture, and where pets frequent. Don't forget welcome mats.
- ▼ Use insect growth regulators, such as methoprene (Precor) or pyriproxyfen (Nylar). If the problem is severe, consider the use of an adulticide such as pyrethrin or permethrin.
- ▼ Sprays are often recommended over foggers. This is because foggers tend to go up and come down, however, they don't always get under furniture, which makes it difficult to treat areas adequately.

For the Yard

1. Professional exterminators or the do-it-yourself approach may be used.
2. Pyriproxyfen (Nylar) may also be sprayed outside.
3. Adulticides, such as bifenthrin (Talstar) or malathion can be used.
4. Concentrate under shaded areas, such as porches, trees and bushes; in areas with organic debris; around the home and where pets frequent.
5. Apply products as directed every three to four weeks, depending on the weather, especially rainfall.
6. Biological flea control is another alternative with use of the natural flea predator —the nematode (*Steinernema carpocapsae*). Check www.ECOstore.com

Concerns about Insects

Hypersensitivity to insects is especially common in the South, but it's seen on pets everywhere insects thrive. The condition is unknown by most small animal veterinarians, so it often goes undiagnosed and untreated.

A number of contributing factors can often be found in the home environment, including a close proximity to water and screened porch access. Pet owners may also complain about biting insects on themselves.

Signs of Insect Hypersensitivity

- ▼ Distribution of lesions varies depending on where the insect bites.
- ▼ Lesions and distribution can be similar to flea allergy or become generalized.
- ▼ Lesions can also become granulomatous.

Diagnosis

- ▼ Intradermal skin testing.
- ▼ No or minimal response to conventional flea treatment.
- ▼ Good response to repellent-containing product.

Treatment

- ▼ No repellent-only veterinary product so the next best thing is permethrin.
- ▼ 2% permethrin should be used one to two times weekly.
- ▼ No less than 1% permethrin should be applied daily.
- ▼ Spot-ons generally will not control the problem if only used once a month.
- ▼ Vectra 3D™ has a 30-day label for mosquitoes.

Additional Precautions to Advise

Problems can be difficult to overcome, particularly if there are overwhelming numbers of insects in the environment or the pet develops a sensitivity to permethrins. Taking a few extra precautions can help.

- ▼ Avoid mosquito bites by keeping pets indoors at dawn and dusk.
- ▼ Use a propane-driven mosquito repeller.
- ▼ Have steroids available.

Summary

It's important to remember that flea control is best accomplished by treating both the pet and the environment. For best results, pet owners need to understand the flea life cycle, as well as the limitations of the different flea control products for pets and the environment. It's our job as veterinarians to help our clients formulate the best program for their particular situation.

Reference:

- 1 Technical Handout A07530 (2007)
- 2 FRONTLINE *Plus* Veterinary Technical Manual FLE-0-1—1-4.20-FEM
- 3 Technical Monograph, Summit VetPharm V3D-019-08
- 4 Technical Manual, EU/2/06/065/001-010
- 5 NADA 151-152
- 6 NADA 141-175
- 7 NADA 141-277

ARTICLE 4

How Veterinary-Exclusive Products Will Help Build Your Practice and Keep Your Door Swinging

Louise Dunn, Snowgoose Veterinary Management Consulting, Greensboro, NC

This article will give you information on the following important topics:

- ▼ Why having your team on the same page helps provide the best healthcare
- ▼ The financial impact of excellent education and training for your team and clients
- ▼ The importance of building relationships with companies that help you keep your door swinging

Client education and savvy marketing are the keys to successful compliance and motivating clients to return again and again. We'll discuss strategies you can use to build and strengthen relationships with your patients, clients and business partners to keep your practice thriving.

Economic times are tough

Pick up a newspaper, turn on the tube, or just look around for proof: Times are tough. More Americans are feeling the financial pinch than ever before, and businesses throughout all industries are experiencing the fallout. Veterinary practices are no exception.

With the cost of living on the rise and less money coming in, clients aren't as likely to spend on "incidentals" — or what they perceive as "unnecessary" care — for their pets. Even though the majority of clients view their beloved pets as members of the family, you can expect the numbers of those coming and going at your practice to dwindle.

Like all business owners, you're faced with a conundrum: How do I keep clients busting down my door despite the tough economy?

Maximize client time

As the veterinary industry evolves, practice owners face even more challenges. Research shows that the number of veterinary hospitals is increasing, but the number of pets is not. Increased competition from more veterinarians entering the field, an influx of pet super stores and corporate practices, and the opportunity for pet owners to buy medicine online all affect your ability to attract customers and grow your practice. Yet we all want the same thing: happy, healthy patients. So what can you realistically do to attract clients and run a profitable business?

Maximize your time. Every time you interact with a client is an opportunity for you to strengthen that bond and further educate him or her of veterinary advances, preventive pet care and the issues specific to his or her pet. Are you taking advantage of this golden opportunity? You can't expect a client to buy a service or product if he or she doesn't fully understand it — or worse, if he or she doesn't know it exists. For example, consider the general public's poor knowledge of feline heartworm disease and the availability of preventives.

Veterinary medicine is becoming more complex, and it can cause clients considerable confusion. You can cut through the clutter for them by presenting clear, concise information.

Take a team approach

Let's also not overlook the important role that your hospital team plays here. The most successful veterinary practices are those that feature a solid support team for their doctors. They play a vital role in the practice's productivity and profitability.

These top-tier practices invest ample time and energy, not to mention money, into hiring and training stellar team members. In fact, most small animal practices will invest between 18 and 22 percent of their gross incomes in salaries for hospital team members. Research shows that the cost of turnover ranges from six months of wages for hourly team members to 18 months for professional team members.

The *2008 Well-Managed Practice* report by Wutchiett/Tumblin and Associates shows that 68 percent of practices have in-house continuing education events at least once a month. The majority of these well-managed practices send all team members to outside continuing education. Training your support team to be able to help educate clients is an absolute must. Think about it, if you're trying to promote advanced diagnostic services like clinical pathology, digital radiology, MRI, CT, ultrasound and endoscopy, shouldn't your team members fully understand the benefits that these provide so they can talk about them intelligently with clients? Absolutely. And with everyone on the same page and talking the same talk, you'll see your compliance rate climb.

Of course, team members in various areas will need to be able to speak about services at different levels. For example, your front office team — receptionists, customer services reps, etc. — will obviously have a different approach with clients than your technicians. Does your hospital team understand why certain procedures and products are medically necessary?

Make sure that all staff members, regardless of position, are properly trained so that they can answer client questions and help you sell your services. What do you need to do to get this done? Can they explain this to clients and answer any questions? Do they understand why you charge what you do for these procedures? Your practice should have certain standard operating procedures (SOPs) in place so that each team member knows the process of educating a client and helping seal the deal.

If they don't understand the importance of following these SOPs, you can expect your client compliance rate to decrease. Remember, compliance is a team sport. And your entire hospital team should share responsibility in educating clients. But you also play a critical role: You must educate your team so that you have complete buy-in from them. That's how top-tier practices thrive. How does your practice stack up?

Build valuable relationships

In addition to your hospital team, consider your "other" team members: Vendors, business partners and advisors. Building solid relationships with these key players will impact your practice. Just like your practice builds relationships within your community — for example, hosting community rabies clinics, talking at schools and scout events — there are companies that have built relationships within the veterinary profession. For example, those who won't sell their products on the Internet or those who host seminars to help educate you on new advances and upcoming treatment trends. These are valuable for relationships that endure.

Play the numbers game

You've heard the old saying, "Numbers don't lie?" It's an adage all practice owners should take to heart. Benchmarking is an important economic indicator to a veterinary practice. If you don't have processes in place to track products and services, you can't measure your success and identify new profit centers.

Consider Internet sales. In the *2007 Well-Managed Practice* report, 20 percent of practices reported that their pharmacy revenue declined by 6 percent to 20 percent. The reality is Internet sales are here to stay.

How will you address this? Veterinary-exclusive products are the way to reinforce your commitment to give the client what is best for the pet and not have the client play a guessing game with their pet's health by using OTC.

Clients are probably not going to be aware of the value of many procedures, so they can only be expected to make intelligent choices if they've been properly educated about their benefits.

Summary

Leadership must maintain focus on patient, client and business outcomes. Every member of the healthcare team must see themselves as a leader. All winning teams know their purpose, and live their culture and unique brand as they work towards consistently achieving their goals. Relationships internal to the practice team and external with business partners must support the purpose of educating clients and providing passionate care. The desire to change when necessary and understand the desired outcome of change will lead a successful practice. The human-animal bond continues to drive our profession, even in the tough times.



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