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Expert Views from a Roundtable on Canine Allergic Disease



Everything You Need to Know But Were Too Busy to Ask About: Itchy Dogs—Part 1 Diagnosis & Treatment

Treating dermatology patients can be as frustrating as it is challenging—for veterinarians as well as pet owners. This roundtable gathered a team of experts in veterinary dermatology for discussion of how they successfully manage their canine patients with allergic dermatitis.

UNDERSTANDING BASIC IMMUNOLOGY HELPS TARGET EFFECTIVE TREATMENTS

One out of every five canine patients that present to a companion animal veterinary clinic is a dermatology case, and many of these are pruritic dogs with clinical signs consistent with allergy. Much has been learned about the pathogenesis of allergic disease during the past 25 years. Understanding the pathology underlying the disease is key to designing appropriate treatment regimens individually tailored to patients.

Dr. Griffin: Let's start by defining some terms:

- **Allergic disease** is a broad term for hypersensitivity reactions to an allergen. Most allergic conditions in dogs are pruritic, unlike allergic disease in humans, who can present with asthma, rhinitis, or conjunctivitis as well as pruritus. The majority of itchy dogs that present to general practitioners are allergic dogs—most commonly dogs with flea allergy, atopic dermatitis, food allergy, and contact allergy.
- **Canine atopic dermatitis** (CAD, a manifestation of atopic disease, sometimes called atopy) is a specific subset of allergic disease. By defi-

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This presentation reflects the discussion of the participants at a live roundtable moderated by Dr. Kathy Gloyd of the Gloyd Group, Inc., Wilmington, Delaware.



The immunologic foundation of allergic conditions can help us understand the basis for selection of state-of-the-art therapy and can help tailor the best treatment protocols for each patient.

—Prof. Day

Clinical Insight #1

Pruritus is the hallmark presentation of all atopic dogs and most other allergic dogs. Taking sufficient time during the initial examination to obtain a detailed history from the pet owner not only informs a proper diagnosis but also gives the owners an opportunity to communicate their primary goal for treatment, which is key for the clinician to understand if therapy is to be successful.

Atopic dogs are a subset of allergic dogs:

- ALL atopic dogs are allergic.
- NOT ALL allergic dogs are atopic.



tion, the single component present in 100% of atopic dermatitis dogs is pruritus. The International Committee on Allergic Disease of Animals (ICADA), a group of international veterinary dermatology specialists, has defined CAD as a genetically predisposed pruritic and inflammatory skin disease with characteristic clinical features that are associated with IgE antibodies, most commonly directed against environmental allergens. This definition is a modification of the original definition proposed by the American College of Veterinary Dermatology task force on canine atopic dermatitis. Because all atopic dogs are allergic, by default the recommendations made regarding allergic dogs also apply to all atopic dogs.

Prof. Day: Our understanding of the immunology of atopic disease, in humans as well as animals, has evolved significantly in the past 25 years. It is relevant for general veterinary practitioners to review the immunologic foundation of allergic conditions so they understand the basis for selection of state-of-the-art therapy and can tailor the best treatment protocols for each of their patients.

Dr. Marsella: We know that CAD is a multifactorial condition: genetic predisposition, environmental impacts, decreased dermal integrity, and barrier dysfunction all play a role. But how is that relevant to the patient and the immunologic responses that underlie the clinical presentation with pruritus? There is new science emerging that explains this!

My co-authors and I use several key steps to describe the immunologic mechanisms that underlie atopic dermatitis in dogs (See **Figure 1**):

1. Environmental allergens cross the skin barrier and present to the immune system.

Canine atopic dermatitis begins when allergens cross the epidermis and are presented to the immune system. This process may be exacerbated in individuals with defects in their skin barrier function, whether due to genetics, self-trauma, or other causes.

2. The immune system responds and cytokines, such as IL-31 and allergen-specific IgE, are produced.

Langerhans cells in the epidermis capture the allergen, which is then processed and presented to T-helper (Th) lymphocytes in the local lymph nodes. These mature into Th2 cells that produce cytokines, such as IL-4 and IL-13, which stimulate B cells to become plasma cells that produce allergen-specific IgE. Activated Th2 cells migrate to the skin. Circulating allergen-specific IgE leaves blood vessels and enters the dermis and epidermis where it binds to Langerhans cells and mast cells.

3. Reexposure to allergens causes release of inflammatory mediators, enhanced immune response, and exacerbation of disease pathology.

On reexposure to the same allergen, epidermal Langerhans cells with surface-bound IgE bind the allergen and migrate to the dermis, where they present the allergen to the T-helper lymphocytes to create more Th2 phenotypes. Additional cytokines, such as IL-31, a recently identified cytokine in dogs, are produced. These induce pruritus by binding to receptors on cutaneous



Scratching ... continues to worsen the barrier function, allowing more allergen penetration.

—Dr. Marsella

nerves. Allergens also cross-link the allergen-specific IgE on mast cells and stimulate the release of inflammatory mediators, such as histamine, serotonin, and substance P.

4. Inflammatory mediators, including IL-31 and other pruritogenic cytokines, stimulate neurons to create itch, perpetuating the vicious cycle of scratching and damage to the skin barrier.

Scratching in response to the neurologic itch signal, secondary bacterial and yeast colonization, or environmental allergens continues to worsen the barrier function, allowing more allergen penetration. This exacerbates

the release of additional proinflammatory cytokines (such as IL-12), which perpetuate the cycle of itching and inflammation.

Prof. Day: These findings provide a mechanistic clue as to how we might treat itching in allergic dogs.

Dr. Nuttall: The skin in allergic dogs seems to be very good at turning on the inflammatory response following fairly trivial insults but very poor at turning it off. These patients require lifelong management, and the owners of these dogs can become frustrated easily. The veterinarian must realize this and work

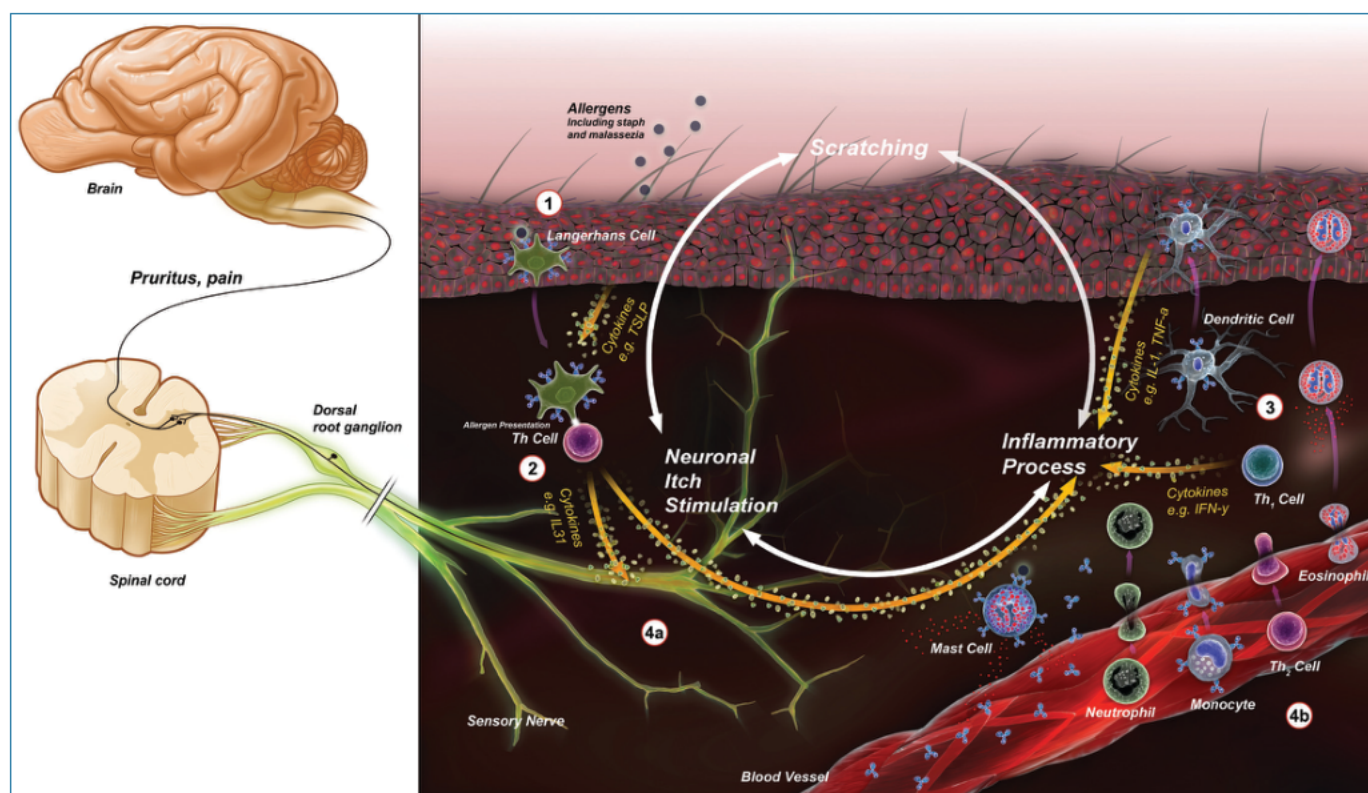


Figure 1. Process underlying canine atopic dermatitis. From Marsella R, Sousa CA, Gonzales AJ, Fadok VA. Current understanding of the pathophysiologic mechanisms of canine atopic dermatitis. JAVMA 241:194-207, 2012. Used with permission.



The skin in allergic dogs seems to be very good at turning on the inflammatory response following fairly trivial insults but very poor at turning it off.

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hard to help them deal with this frustration because it can impact their compliance with treatment regimens and even their satisfaction with the veterinarian.

I teach my students to start the workup of every pruritic dog with a detailed history:

- **Be an active listener when taking a history.** Try to understand what the allergic triggers might be, how the animal has actually been treated in the past, and what was the response to treatment.
- **Have empathy for these clients.** Clients want to do the best for their dog. Try to assess the owner's ability to implement past therapies. If an owner was told to bathe the dog daily, is he or she actually capable of doing this, or is the pet owner arthritic? Ask open-ended questions that allow owners to provide the maximum amount of information without having to admit to noncompliance. I ask owners if they are able to pill their dog three times a day or if they would prefer a long-lasting injection rather than say "Did you give the medicine twice each day and use all the pills?" If you ask them that way, they will not tell you the truth, and you will think the treatment regimen was not effective when actually the medication was not given.

DIAGNOSING A PRURITIC DOG: START BY RULING OUT THE MOST COMMON CAUSES

Clinicians should have a consistent approach to diagnosing the underlying cause of pruritus in dogs. Start with the causes that are most common and easiest to rule out. If the patient does not respond, then move down the diagnostic tree to look for others. But remember that allergies can be multifactorial. So, if the patient has a partial response or initially responds and then relapses, do not be afraid to move back up the

diagnostic tree to look for compounding factors that may be contributing to intermittent allergenic stimulation, such as seasonal factors like fleas or pollens.

Dr. Griffin: Every veterinary dermatologist has a slightly different approach to working up a pruritic dog—that is the art of making a diagnosis. But there are three simple steps that can provide a plethora of answers and should be part of the workup for every itchy dog:

1. Taking a complete history
2. Conducting a good dermatologic exam
3. Performing cutaneous cytology

A complete history for my dermatologic patients includes:

- Geographic information: what is the patient's environment?
- When did the signs first begin, and how did they progress?
- Is there recurrence or seasonality of signs?
- What previous therapeutic interventions were used, and what was the clinical response?
- List current medications (prescription as well as over-the-counter).

The physical exam will then:

- Assess the type and pattern of the lesions.
- Help me understand if fleas might play a role for that patient—depending on the location, flea allergy can significantly contribute to disease in an allergic patient as it can lower the threshold to other allergens.

Remember that otitis can be part of the clinical syndrome with which allergic patients present. Otitis is thought to be associated with allergic disease complex in 43% of cases.¹

Clinical Insight #2

Itchy dogs are ubiquitous in veterinary dermatology. Pruritus in dogs can manifest in many ways. Most itchy dogs scratch, but pruritus can also manifest as biting or gnawing at the skin, shaking the head, and excessive licking or rubbing of an area.





In a short time I can rule in or out four of the six most common causes of pruritus by using three simple steps as a foundation of each dermatology consultation.

—Dr. Griffin

Cytology helps me:

- Identify pyoderma and what role infection may be playing in the patient's disease.
- Assess the contribution of bacterial overgrowth or *Malassezia* yeast.

Using the three steps I noted as a foundation, I am literally able to determine in a 15-minute exam if I am dealing with one of four of the six most common causes of pruritus.

Following initial treatment, the next critical step is making sure the pet comes back for follow-up. You can then pursue a diet trial and, if the dog is pruritic in the pattern of atopic dermatitis, you may already have a diagnosis.

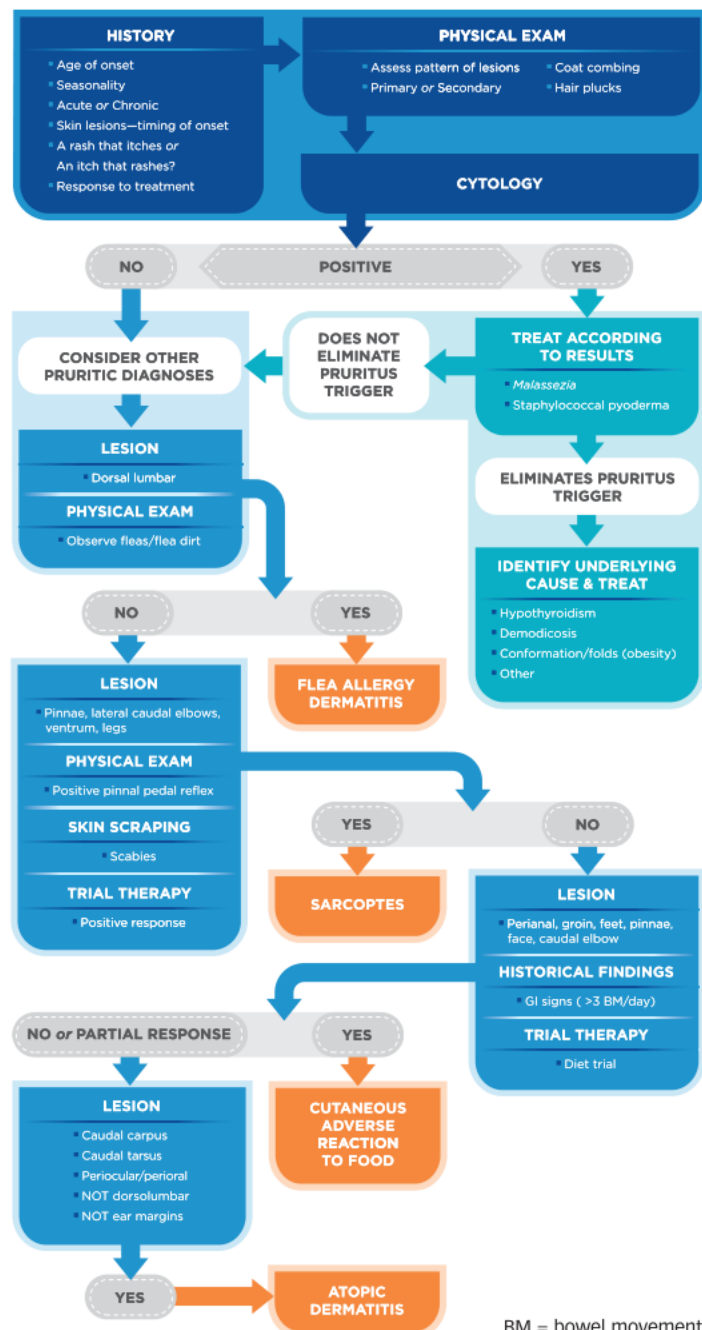
Dr. Nuttall: Dr. Griffin is right. There is an art to veterinary dermatology that you can only develop with practice—consistently performing the same workup on every dermatology patient you see. This helps you develop the ability to recognize the subtle differences in each case that can push the differential diagnosis toward infection, the different types of allergy, or ectoparasites.

Dr. Marsella: Atopic dermatitis is a diagnosis of exclusion. My philosophy is to start by treating the treatable. I start by ruling in or ruling out the obvious conditions that can be readily identified. Make sure you rule out scabies and *Demodex*, even if the scraping is negative, especially if you have a dog that is very itchy. A negative scraping can often mean nothing when trying to rule out scabies—it is one of those procedures you may have to repeat if the patient does not respond to initial therapy as anticipated.

Cutaneous Cytology

Dr. Griffin: I think practitioners underuse cytology. If they follow a simple, routine

DIAGNOSTIC APPROACH TO PRURITUS IN DOGS



BM = bowel movement



The more cytology you do, the more comfortable and adept you become in making such interpretations.

—Dr. Marsella



Clinical Insight #3

Allergy testing should be used once a clinical diagnosis of atopic dermatitis has already been made. The clinician needs to determine which allergens to include in the allergen-specific immunotherapy based on the dog's history and clinical presentation.

approach to cytology, they gain a lot of information that is really valuable, without a lot of training.

Dr. Marsella: Our students tend to ask, “How do I interpret cytology? For instance, how many bacteria does it take to make pyoderma or how many yeast for *Malassezia* dermatitis?” There is no cookie-cutter recipe for this determination. But the more cytology you do, the more comfortable and adept you become in making such interpretations. It takes experience and practice to correlate cytology with clinical presentation, but the best place to start is just doing a cytology exam for each dermatology patient.

Dr. Nuttall: The exact methodology is not as important as the practice you get from routinely looking at cytology and correlating it to the clinical presentation and therapeutic results.

Allergen Testing

Dr. Griffin: Serum allergen tests look for the presence of one of two antibodies: IgE or IgG. In a specific situation, for instance multiple pollen positives, the skin test is a good diagnostic, but false positives occur with other allergens and false negatives occur with pollen, so it definitely is not definitive.

Dr. Marsella: Serum allergen testing should not be used as a diagnostic test because you cannot discriminate between the normal and the atopic just based on a blood test. There are false negatives, and not all allergens are in the environment year-round so you need to take season into account. Additionally, there are animals that have clinical signs of atopic dermatitis in the absence of detectable allergen-specific IgE. This subset of patients is believed to have a nonallergic form of atopic dermatitis also called atopic-like dermatitis.

Prof. Day: We need to remember that clinically normal animals can have allergen-specific IgE or IgG responses. Bottom line on serology is that just because there is antibody in the blood does not mean it will be attached to mast cells in the skin; there may not be a correlation between serology and intradermal testing.

Food Trials

Dr. Zabel: Food elimination trials remain one of the important steps in ruling out food allergies and one that a general practitioner can work with a pet owner to implement properly.

Dr. Nuttall: I generally do a food trial in all dogs with a nonseasonal pruritus. If we miss a food allergy, we have missed a disease that is easily managed. But food trials can be hard to implement, and the full compliance by the owner that is necessary to implement them properly is hard to guarantee. It sounds counterintuitive, but I have found I get better compliance from owners when I tell them from the start that there is a good likelihood the trial will not work! This makes sure that the owners' expectations are realistic. Explaining the importance of the food trial and the consequences of missing an allergy is important. It really helps encourage the owners. When food trials work, the results can be brilliant.

CLIENT COMMUNICATION

Owners of dogs with allergic disease can be your best clients—or one of your biggest challenges. Using a few basic communication skills can make the difference. Learn to set appropriate expectations for pet owners and empathize with the frustration they experience in managing a recurrent, lifelong condition. Take time to help them recognize flare factors and avoid antigenic stimuli. Ultimately, if successful



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—Dr. Zabel

management is eluding you, you may want to consider referring the patient to a specialist. In difficult cases a referral may help your hospital retain that client.

Dr. Marsella: I think the main challenge in successfully managing allergic patients is setting expectations and properly educating the pet owner. We must be sure our clients understand that you rarely cure allergies; rather we hope to manage them successfully long-term by developing a sustainable plan. That is crucial to success.

Dr. Nuttall: For many of my clients I am the third or fourth veterinarian they have seen. In a multiple-vet practice they could see several different veterinarians in one year, even though one veterinarian may have seen the client only once and think the job is done. If you look back in the records and the patient has been in multiple times for treatment of otitis, pyoderma, or pruritus, a warning bell should go off that it needs diagnosis and ongoing care. It is best to set realistic expectations from the beginning so that owners understand that this is a chronic disease that cannot be cured and regular treatment is needed to maintain a good quality of life.

Dr. Griffin: I always tell general practitioners that, even if you think you are seeing an acute case, you should be warning the owner that this could become a chronic, recurring condition. Many clients start off with a very good image of and relationship with their veterinarian. Then that is changed by the chronicity of the disease, something that could be avoided by setting them up appropriately from the very first visit. Some veterinarians respond to owner frustration by giving a shot of steroids the minute an owner complains about itch. That sets the unrealistic expecta-

Clinical Insight #4

We must assure that clients understand we cannot cure allergies but rather the objective is to manage them long-term. A great deal of frustration can be avoided on the part of pet owners if they really understand this from the outset.

tion that allergies can be “cured” rather than chronically managed, and the practitioner inadvertently gets caught in this vicious circle of reaching for the steroids.

Dr. Zabel: I discuss quality of life with my owners along with the fact that I only see their dog a short time every few weeks, while they are with it 24/7. I ask them to define their treatment objective for their pet: Is it to know the exact diagnosis? Is it to help the dog stop scratching and be more comfortable? Knowing their goal helps me create common, achievable objectives and together define what success looks like. It is so important to have good communication and to ensure that they also understand what we as clinicians can do for them before we continue with treatment. Otherwise we will have all of these frustrations on return visits. Or worse—they find another veterinarian.

Dr. Nuttall: I have some personal experience with the frustration of treating a chronically allergic dog. My mother has an atopic Labrador retriever. He was maintained for a number of years on topical hydrocortisone aceponate spray, but my father became ill and was no longer able to help my mother administer the topical medication. We’ve had to address this and change the treatment protocol. If I wasn’t witness to their home life myself and was treating this dog in my office, I would never have been able to relate to their frustration and they might have sought care elsewhere.

Dr. Zabel: I have an example of poor communication and how it can result in real consequences for the patient. I was treating a bulldog





It is important for the veterinarian and the pet owner to create common achievable goals for pruritic dogs.

—Dr. Zabel

that had been on the same regimen for 6 months at home: we had instructed the owner to wipe the dog's paws and nasal folds down twice a day and shampoo every 2 days to cleanse the skin surface and minimize the allergens being presented to the immune system. The owner said she was complying, but the treatment results were not as good as we had hoped for. Then the dog was admitted to our clinic while the owner was on vacation to see if we could control the allergies. For 4 weeks the students in our clinic performed the same regimen of wiping the dog twice a day and shampooing every 2 days. When the owner returned, she realized how well the dog responded to daily treatment—we all came to see that the treatment regimen that was recommended could, in fact, successfully manage the dog's condition, but that we had failed to explain and demonstrate to the owner how to perform the procedures.

Dr. Nuttall: I think that this case is a great example of why it is also really important to show owners what they need to do rather than just hand the shampoo or other treatments over to them. I tell the nurses in our first-opinion practices that they can use another 15 minutes to show owners how to administer eardrops or give tablets, while freeing up the veterinarian to go start the next appointment. For veterinarians it is also a great example of the fact that not all clients are able to comply with what seem like simple instructions. But sometimes by demonstrating what the results could be, you can coach an owner into better compliance.

Dr. Marsella: A personal experience absolutely changes the way you talk to clients and helps you empathize as far as what they are dealing with. As the owner of an allergic dog, I now know how it feels to be in the midst of a food trial and drop something on the floor, have the

dog lunge for it, and face the fact that you have to start the trial all over again. Dermatologists ask a lot of their clients in the long term. Like any of us who have tried to initiate a change in our diet, we know you can be good for a few weeks; but 6 months, 2 years, or a lifetime is a different story

Dr. Nuttall: I think the best way to support owners whose dog has a chronic allergic condition is to realize how helpless the owners feel. The unpleasant sensation of itching is something the owners can really empathize with, and it is very difficult to watch a beloved pet suffer in that way. I know from watching my mother's dog on the rug scratching and chewing each night and not being able to do anything about it. The impact on everyone's quality of life is quite understandable but is something we tend to underestimate. It takes tremendous dedication for an owner to live with a pet with chronic allergies. However, I have found there really is no correlation between the bond and compliance as there are other factors that impact the ability to be compliant.

In our clinic we refer to it as adherence to treatment rather than compliance. This is perceived as less judgmental by the clients and helps them be more open about what they can and cannot do at home. We explain that before we move on to something more expensive or with less evidence of efficacy or safety we should explore ways that we can help our clients stick to the initial treatment program. For instance, we can fit a fixed-interval dosing schedule into a reasonable portion of the day or alter treatment to avoid asking an elderly, arthritic client to open a pill bottle 3 times a day and pill her dog.

Part 2 of this roundtable will be published in the April issue of *Clinician's Brief*.

4 Messages That Clients Need to Take Home from the Clinic

1. This is likely a chronic condition that will recur throughout your pet's life.
2. Allergies cannot be cured; the objective is effective management to ensure a good quality of life.
3. Pruritus and other signs that impact quality of life need to be controlled by effective management.
4. Pet allergies can be frustrating for both the pet's owner and the veterinarian. An effective partnership can create an environment in which the owner can freely communicate what he or she can and cannot do at home so effective treatment regimens that can work for both the pet and the pet owner are created.

Reference

1. **Aetiology of canine otitis externa: A retrospective study of 100 cases.** Saridomichelakis MN, Farmaki R, Leontides LS, Koutinar AF. *Vet Dermatol* 18:341-347, 2007.

For further information on managing atopy and other dermatologic conditions, visit ExcellenceInDermatology.com

