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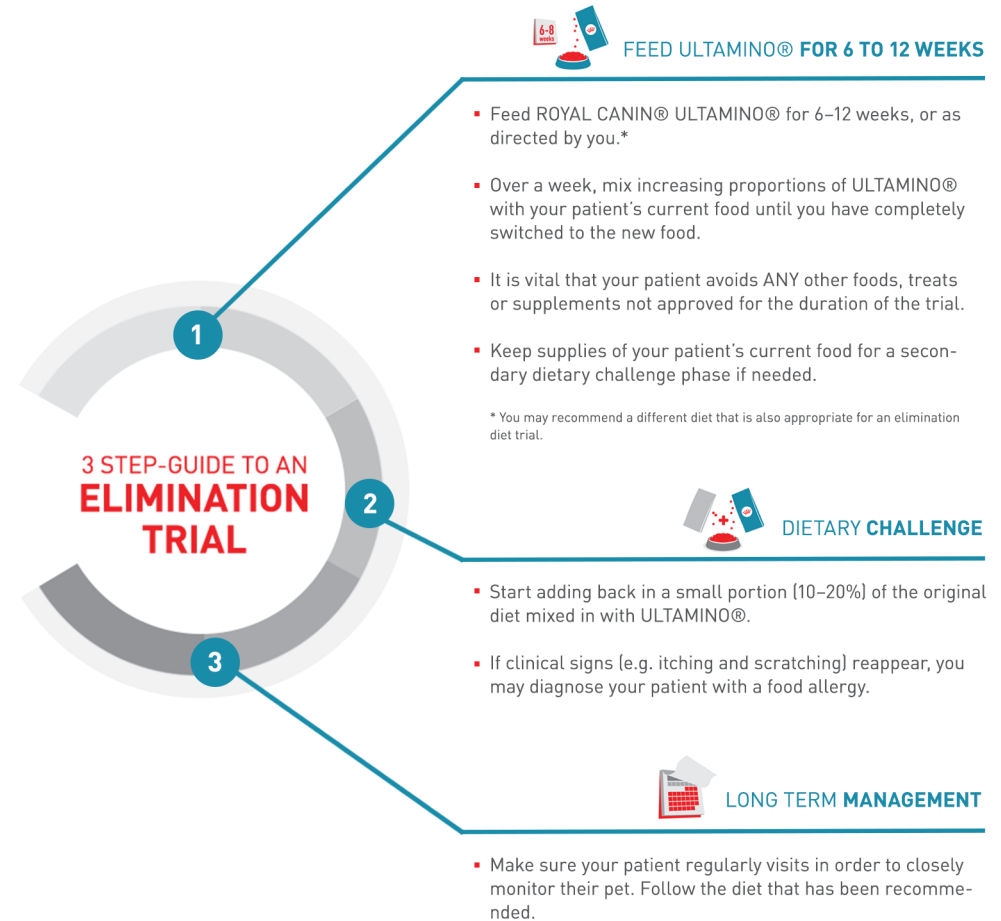
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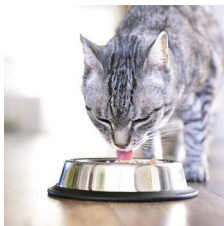
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Dermatology and nutrition:

Beyond food allergy

By Craig Datz, DVM, MS, DABVP, DACVN

When dogs and cats present with skin disorders, the initial approach is to collect a history, do a physical exam, and then perform diagnostic tests to rule in or rule out common conditions.

After establishing a tentative diagnosis, most veterinarians will next consider which medications are most appropriate (e.g. antibiotics, antifungals, parasiticides). It is not as common to consider diet and nutrition as part of the workup and treatment for dermatologic disorders, other than performing elimination diet trials for suspected cutaneous adverse food reaction (food allergy). However, the right diets, nutrients, and sometimes nutritional supplements can have a significant benefit in improving or resolving certain skin disorders. This article highlights some of the options for incorporating nutritional science into the management of dermatologic disorders.

Cutaneous adverse food reaction

The most common presentation for a dog or cat with cutaneous adverse food reaction (CAFR) is nonseasonal pruritus, although other syndromes such as otitis externa and gastrointestinal (GI) upset may occur.^{1,2} While some

companies offer “food allergy testing” using serum, saliva, or even hair clippings, the only valid diagnostic test is an elimination diet trial. There are a number of veterinary therapeutic diets that can be used for diet trials and long-term management. Home-cooked diets using novel foods are another option.* That said, unlike veterinary diets, these are not complete and balanced and, therefore, unsuitable for long-term feeding unless the recipes are prepared or validated by a board-certified veterinary nutritionist. A directory of nutritionists offering consultations is available at acvn.org.

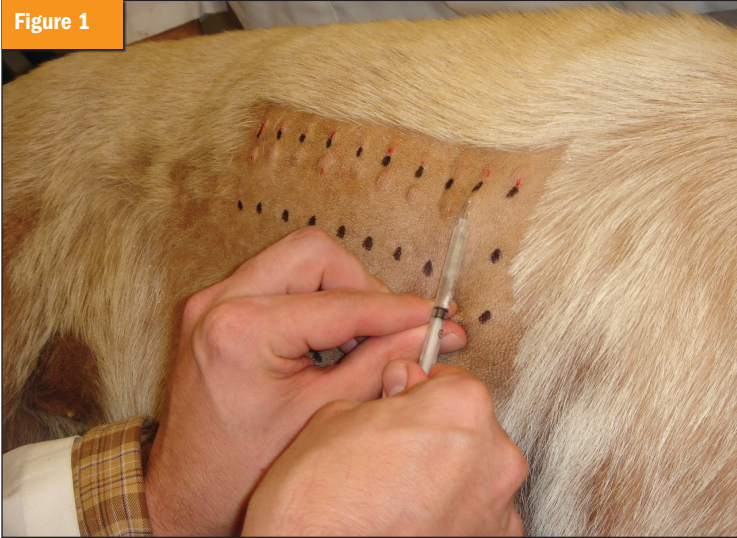
Atopic dermatitis

Atopic dermatitis (AD) is commonly seen in dogs and cats, and is the main differential for pruritus after other causes (*e.g.* parasites and infections) have been ruled out.³ Current recommendations for treatment of mild cases include allergen avoidance, shampoos, and other topicals.** Advanced cases often require systemic drugs, such as glucocorticoids, oclacitinib, cyclosporine, or lokivetmab.³⁻⁵ Allergy-specific immunotherapy is safe and effective in the majority of cases, but it requires referral to a dermatology specialist for testing and selection of allergens (Figures 1 and 2).

Because of side effects and concerns regarding long-term use of medications, practitioners may consider ancillary treatments, including diets and nutritional supplements. Several studies in dogs with AD have shown improvement by feeding diets formulated for skin support.⁶⁻⁸ Diets containing fish and/or high concentrations of fish oil may be more helpful than standard diets, but not all atopic dogs respond the same. Some commercial diets claim to improve or fortify the skin barrier, which, in turn, may help manage dogs with atopy.⁹⁻¹² A reasonable approach is to take a thorough diet history and if the owners are willing to do a diet trial for four to eight weeks, consider a transition to a veterinary therapeutic diet formulated for AD. Surveys of dog owners visiting private dermatology practices indicated dietary modification was thought to be beneficial for AD.¹³ It can be difficult to attribute improvement to diet alone if other therapies are used concurrently, but overall skin and coat health and appearance, as well as stool quality, can be monitored.

Dietary supplements may be used in dogs with AD. The most common are likely to be fatty acid capsules and liquids, especially fish oil. Studies in dogs with skin disorders date back at least 30 years, with varied results.¹⁴ The desired outcome is a reduction in signs of pruritus and inflammation, or a sparing effect on concurrent medications such as glucocorticoids or cyclosporine. In most studies, supplements were given without

Figure 1



Photos courtesy Craig Datz

Figure 2



Figure 1 shows a dog with atopic dermatitis having intradermal allergen testing performed by a dermatologist. Figure 2 depicts ventral neck and front limb alopecia and erythema in the same dog.

controlling or standardizing diets and so the total intake of fatty acids could not be accurately determined. Suggested doses can be confusing, as recommendations can be made for fish oil products, omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) combined, or EPA separately.

In addition to fish oil, some products contain functional ingredients that may be helpful for skin support. Commercial diets may report omega-3 content instead of EPA and DHA, and the units may differ (e.g. as fed, dry matter, and/or metabolizable energy basis, or even amount

per cup or can of food). Finally, adverse effects are possible when excessive amounts of supplements are used or if fish oil is added to diets that already have high concentrations of EPA and DHA.¹⁵ Starting at a high dose can lead to gastrointestinal upset and a “fishy” odor. It is better to start at a low dose and increase gradually over several weeks. Table 1 lists suggested doses of EPA+DHA for dogs with pruritus, along with a safe upper limit that should not be exceeded. Include EPA+DHA in both diet and supplement when calculating total intake.¹⁶⁻¹⁸

Vitamin supplements have been used in an attempt to control pruritus in dogs with AD. In a small study, dogs received cholecalciferol, a form of vitamin D.¹⁹ There was a decrease in pruritus in skin lesions compared to a placebo group. However, the doses used greatly exceeded the safe upper limit, so until further safety studies are performed, high-dose vitamin D is not recommended.¹⁸ Vitamin E was shown to improve clinical scores in dogs with AD at a dose of 8.1 IU/kg daily for eight weeks.²⁰ There is no established safe upper limit, so vitamin E is a reasonable supplement for a therapeutic trial.

Zinc-responsive dermatosis

There are two recognized zinc-responsive disorders of dogs. Syndrome 1 affects northern breeds, such as Siberian huskies and Alaskan malamutes. Rapidly growing large-breed puppies are prone to developing syndrome 2.²¹ Syndrome 1 is hereditary and involves decreased absorption or metabolism of dietary zinc, while syndrome 2 can be associated with an incomplete or unbalanced diet during the growth stage. Skin lesions typically are seen around the eyes, muzzle, mouth, and pinnae, and

“ Breeders and owners of dogs and cats with black hair coats occasionally report a change in color to reddish-brown (sometimes called “red coat syndrome”). A dietary cause has been identified that may be associated with feeding certain commercial diets.”

Table 1

Dog body weight (kg)	EPA+DHA (combined) dose for atopic dermatitis (mg)	EPA+DHA (combined) safe upper limit (mg)
5	300	1,200
8	450	1,700
11	600	2,200
15	750	2,800
19	900	3,300
23	1,050	3,800
28	1,200	4,500
32	1,350	4,900
37	1,500	5,500

include symmetric erythema, alopecia, scaling, and crusting. Histopathology is required to confirm the diagnosis. Dogs with syndrome 1 require lifelong diet supplementation with zinc, while those with syndrome 2 benefit from diet change, along with short-term zinc supplementation (one to two months).²² There are a number of veterinary and human zinc supplements, and zinc methionine is considered to be the most bioavailable. Dosing is 2 to 3 mg/kg/day, which is based on the elemental zinc content of the product, not the total weight.

Changes in coat color

Breeders and owners of dogs and cats with black hair coats occasionally report a change in color to reddish-brown (sometimes called “red coat syndrome”). A dietary cause has been identified that may be associated with feeding certain commercial diets. Studies have shown increasing the concentration of the amino acids tyrosine and phenylalanine in diets can restore black hair color. The amounts needed are at least twice the minimum required for normal growth.^{23,24} Similarly, dogs with white coats had improved coat color when fed a test diet with mildly decreased tyrosine, phenylalanine, and copper compared to a control diet.²⁵ While genetics and breeding are the main factors, proper nutrition can enhance coat color.

Hepatocutaneous syndrome

Also called superficial necrolytic dermatitis, hepatocutaneous syndrome is associated with chronic liver disease or glucagon-secreting pancreatic tumors in dogs and rarely cats. The pathogenesis is unknown—decreased plasma amino acids is a common feature, along with increased aminoaciduria.²⁶ Clinical signs include pruritus, erythema, scaling, crusting, and ulceration on the head and distal limbs, along with hyperkeratosis and ulceration of footpads (Figure 3).²⁷ Evidence of liver disease can be seen on routine lab work; ultrasonography of the abdomen may reveal an abnormal liver with a hyperechoic reticular pattern. Confirmation may require histopathology of the liver and affected areas of the skin. The prognosis is poor, but with treatment, some dogs may survive for a year or more. Because part of the disease syndrome involves amino acid deficiency, oral or parenteral supplementation is necessary. Intravenous infusions of amino acids can be performed in the hospital and repeated every one to three weeks, depending on clinical response. Oral supplementation with protein powders and/or high-protein diets may be attempted, but may not be as effective as infusions. Other supplements, such as egg yolk, fish oil, zinc, and hepatoprotectants, have also been used, although effectiveness is unknown.^{28,29}

Figure 3



Ventral abdomen skin lesions in a dog with hepatocutaneous syndrome.

Symmetrical lupoid onychodystrophy

Though uncommon, symmetrical lupoid onychodystrophy (SLO) affects dogs and initially causes claw loss. As the condition progresses, more claws are lost and are replaced by misshapen, soft, brittle claws.³⁰ The cause may be immune-mediated or genetic, although the exact pathogenesis is unknown. In addition to regular nail trimming and foot care, recommended treatments include fish oil supplementation and a combination of tetracycline and niacinamide (a form of niacin, vitamin B3). It often takes months for improvement or resolution, and rechecks should be performed at least every six to eight weeks. The EPA+DHA doses in Table 1 can be used as a starting point. Niacinamide (not niacin) is empirically dosed at 250 mg to 500 mg every eight hours (three times a day), depending on the dog's size. If the condition improves, the dosing can be decreased to every 12 hours.^{30,31}

Unbalanced diets and skin disease

There are a number of dermatologic manifestations that can result from feeding an incomplete and unbalanced diet. Most commercial pet foods formulated and manufactured by reputable companies contribute to a healthy skin and coat in dogs and cats. However, feeding home-prepared diets, table scraps, improper supplements, or commercial diets that may have low digestibility or nutrient bioavailability can lead to skin disorders. Proponents of raw-meat diets often point to an improved skin and coat, but there are significant risks associated with these diets and a lack of published evidence for any benefits they may offer.³² An older report of 13 dogs found a crusting dermatosis resolved completely when low-quality commercial diets were changed to high-quality diets.³³

Dogs and cats require an adequate amount of dietary fats and oils containing essential fatty acids. Improper storage of dry pet foods can lead to oxidation of fatty acids (rancidity). Adding supplements to an inappropriate diet in the hope of improving the skin and hair coat is not as helpful as switching to a high-quality pet food or veterinary therapeutic diet formulated for skin support. A complete diet history should be obtained for all dogs and cats presenting with skin disease. Further, a careful evaluation of the current and past feeding plans can help in formulating differential diagnoses and treatment options. ●

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* More information about diagnosing and managing CAFR can be found in recent *Veterinary Practice News* articles. See “Food allergy: Fact versus fiction” by Alice Jeromin, RPh, DVM, DACVD at bit.ly/2PIEGRm and “Is there a gold-standard test for adverse food reactions?” by Brennen McKenzie, MSc, MA, VMD, cVMA at bit.ly/2Ttpvyi.



There are a number of dermatologic manifestations that can result from feeding an incomplete and unbalanced diet.

** See “Soothe the itch” in *Veterinary Practice News* by Kim Campbell Thornton at bit.ly/2HsQOlK.

View references for this article at veterinarypracticenews.com/dermatology-nutrition-may-2019.



Getting to the root of pyoderma

By Marissa Heflin

Scaling, hair loss, papules, pustules, and epidermal collarettes. All are clinical signs pointing toward canine pyoderma. The culprit may seem clear at first glance; however, veterinarians must look at the bigger picture to address the underlining issue.

It's important to first understand the meaning of pyoderma, particularly regarding the depth of infection, says Elizabeth Layne, DVM, Dipl. ACVD, clinical instructor at the University of Wisconsin-Madison, School of Veterinary Medicine. The most common form of pyoderma is superficial bacterial folliculitis, a bacterial infection of the upper part of the hair follicle, caused by *Staphylococcus pseudintermedius*.

Deep bacterial infections (presented as swelling, nodular lesions, and oozing draining tracts) can occur, but that is a different diagnostic and therapeutic approach, Dr. Layne adds.

Superficial bacterial pyoderma is almost always secondary to some kind of skin abnormality, such as atopic dermatitis. Other skin diseases (e.g. flea allergy dermatitis, sebaceous adenitis, or primary seborrhea) can also result in superficial pyoderma, Layne notes. Systemic illness or immune compromise may lead to superficial bacterial pyoderma as well.

Since pyoderma commonly masks another condition, a vicious treatment cycle can ensue if the underlining problem isn't identified.

“Veterinarians often recognize the signs of infection and treat with antibiotics and/or topical disinfectants, but because the underlying skin or systemic abnormality isn’t addressed, the pyoderma returns when treatment is stopped,” Layne says. “Malassezia, the skin commensal yeast, can be problematic, along with *Staph*, so the yeast infection needs to be recognized and treated in addition to the bacterial infection.”

Treatment

Cytology is the most important part of diagnosing pyoderma, according to Becky Valentine, DVM, Dipl. ACVD, of the VCA Calgary Animal Referral and Emergency Center in Calgary, Alberta, Canada.

“Cytology is an easy and rapid diagnostic tool that is essential for the diagnosis of pyoderma,” Dr. Valentine says. “Once a diagnosis is made, appropriate antimicrobial therapy should be instituted. Investigation into why the patient developed pyoderma should be initiated.”

As outlined in the International Society for Companion Animal Infectious Diseases’ (ISCAID’s) published guidelines, topical therapy is the first line of defense for treating localized and mild cases of superficial bacterial pyoderma, says Catherine Outerbridge, DVM, MVSc, Dipl. ACVD, Dipl. ACVIM (small animal internal medicine), president of the American Academy of Veterinary Dermatology (ACVD) and professor of clinical dermatology at the University of California, Davis (UC Davis).

Topical therapies can come in various forms, such as sprays, mousses, or wipes containing disinfectants.

“There are a number of companies developing new topical treatments all the time, and usually they can provide some *in vitro* data on bacterial and yeast killing,” Layne says. “There are some studies on residual activity of shampoos, too, showing that dog hairs washed in certain shampoos continue to inhibit bacterial growth well after the shampoo has been rinsed away.”

Grooming shouldn’t be overlooked.

“Baths twice per week with a shampoo containing two percent chlorhexidine and two percent miconazole, along with daily application



Photos courtesy Michael Rossi

of two percent chlorhexidine solution for four weeks, has been shown to be as effective as systemic antibiotics,” Layne says. “If the infection is focal, this regimen can be used focally.”

The decision to administer topicals versus systemic antibiotics is a clinical judgment, Valentine says. Factors to consider are owner compliance, patient cooperation, and degree of infection and pruritus.

“It is very common to encounter bacteria that may be resistant to systemic antimicrobials,” says Michael Rossi, DVM, Dipl. ACVD, director of clinical studies at Coastal Veterinary Dermatology & Ear Clinic in Houston, and conference speaker for Ceva Animal Health. “It is for this reason we should not forget to couple systemic therapy

Lateral thorax of a patient with underlying allergic disease. This photo shows an epidermal collarette with alopecia, erythema, and scale.

with topical treatments. This may lessen the development of increased antibiotic resistance [in pets]. There are several topical compounds, such as chlorhexidine, sodium hypochlorite, and phytosphingosine, that have demonstrated good efficacy against antimicrobial resistant bacteria.”

Curve ball

The pyoderma treatment playing field gets a bit muddled once antibiotic resistance takes the mound.

“The emergence of bacterial strains in veterinary medicine resistant to virtually all antimicrobials has complicated how we as practitioners manage pyoderma,” Dr. Rossi says. “Some of this has been realized though the transfer of traditional resistance genes, while more and more research is being focused on the microbe’s ability to produce an effective, mature biofilm.”

Rossi says he always encourages practitioners to culture sooner rather than later, and use antimicrobials for appropriate strengths and lengths of time.

“The biggest risk factor for the development of antimicrobial resistance is the use of antibiotics in the preceding six to 12 months,” says Outerbridge, who notes up to 40 percent of skin infections seen at UC Davis are caused by resistant strains of *Staph*.

Consider this scenario: A dog gets recurrent skin infections, but is not properly evaluated to determine the underlying reason for the infection. That dog, Outerbridge points out, is likely to receive repetitive courses of antibiotics. This, in turn, increases the risk of developing resistant skin infections.

“With the rise in methicillin-resistant *Staphylococcus pseudintermedius* and other resistant skin pathogens, it is imperative we all use good antimicrobial stewardship,” Valentine says. “This includes reaching for topical antimicrobial treatments whenever possible.”

When systemic antibiotics are chosen, practitioners should ensure the right antibiotic is administered at the right dose and duration, Valentine adds.

“Generally, the cephalosporins or clavulanic acid-amoxicillin are good first choices,” Layne says. “If those are not effective at an appropriate dose and duration of treatment, aerobic bacterial culture should be performed before guessing which antibiotic class might be effective.”

With the rise in antibiotic resistance, there has been renewed interest in *Staphylococcal* bacterins and in *Staphylococcus aureus* phage lysate treatments, according to Layne.

Staphylococcus aureus phage lysate is a vaccine indicated for the treatment of recurrent



Ventral abdomen of a patient with superficial pyoderma. Here, we see erythematous papules and a solitary pustule.

canine pyoderma and related *Staphylococcal* hypersensitivity, or polymicrobial skin infections with a *Staphylococcal* component.

The vaccine is not a primary treatment to eliminate the infection, but rather a treatment that prevents recurrence, according to David Ganfield, PhD, co-owner of Delmont Laboratories.

“[The vaccine] treats the immune system of the dog by way of skin injection,” says Dr. Ganfield, adding the product can be given at the same time as topical treatments or antibiotics.

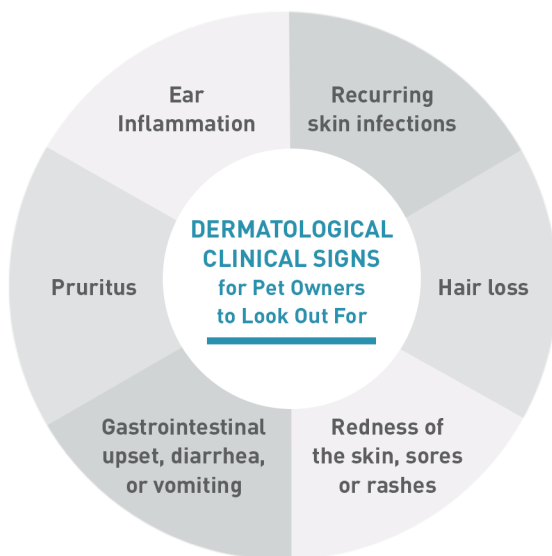
The home-run message, according to field experts: First, be judicious in the use of oral antibiotics. And second, determine the underlying diseases predisposing to bacterial skin infections and treat those.

“If we can all reduce our use of systemic antimicrobials, we will be helping to take one step toward reducing the ever-increasing threat of resistant infections,” Valentine says. ●

EDUCATING PET OWNERS ON ALLERGIC DERMATITIS

What is it and how do pet owners know if their pets have it?

Sometimes problem skin is more than a skin problem. It's important pet owners know that inflammation of the skin caused by an allergy could be difficult to diagnose. Finding relief for their pet starts with identifying the underlying condition that is making their pet scratch, lick, bite, or rub. An elimination trial will help establish whether adverse food reaction is the underlying cause of their pet's itching and other signs, or if it's Atopic Dermatitis.



Manage dermatological health for Atopic Dermatitis and Adverse Food Reaction with Royal Canin Nutrition.



What is Atopic Dermatitis?

Canine atopic dermatitis is the pruritic inflammatory skin disease that results from the genetic predisposition to develop allergies to environmental allergens. These can include pollens, molds, dust, and house mites to name just a few. While there is no cure for atopy, Royal Canin® Skin Support helps relieve complications through omega-3 fatty acids and a unique blend of antioxidants and skin barrier complex.

What is Adverse Food Reaction?

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Up to scratch:

Topical treatments for skin conditions

By Kim Campbell Thorton

Itchy skin conditions are high on the list of problems pet owners bring to veterinarians. Approximately 10 percent of cats and dogs suffer from some type of allergy. Allergic dermatitis was the most common health issue last year among dogs insured with Nationwide, with more than 223,000 individual claims at an average cost of \$293 per dog. In the same dataset, this condition ranked ninth for cats.

Primarily, itchy skin occurs in response to one or a combination of hypersensitivity disorders: atopic dermatitis, food allergies, or flea allergy dermatitis. Parasites, infectious conditions, and other skin diseases can also be itchy.

Fortunately for dogs and cats, flea infestation and flea allergy dermatitis are less common and not as severe these days, thanks to the number of effective flea control products on the market. However, atopic dermatitis and food allergies still frequently send pets into a frenzied itch-scratch cycle that is often followed by secondary bacterial and yeast infections.

These patients may not simply have an itchy allergic hypersensitivity disorder, though. Atopic dogs and cats can have abnormal skin barriers, which are part of the atopic dermatitis syndrome. Skin barrier defects lead to moisture loss and make patients drier, scaliier, and more prone to infections.

A different approach

Treatments for itchy skin haven't changed, but the approach has. The rise of antimicrobial resistance over the last several decades has veterinarians taking a second look at how and when they use antibiotics.

"We're becoming much more judicious in our use of systemically administered antibiotics," says Amelia G. White, DVM, DACVD, associate clinical professor of dermatology at Auburn University College of Veterinary Medicine. "We're tending to use and lean more toward topical therapy as an approach to infections, both bacterial and fungal."

That may mean treating bacterial skin infections with medicated shampoos first. If that doesn't work—or if the patient is immunocompromised and has a severe widespread skin infection—a systemic antibiotic may be used in addition to the topical therapy.

Why topicals?

While there are several good oral and injectable treatments to ease itchiness, topical treatments can play an important role in managing pruritic skin disease. Among them are moisturizing shampoos, as well as antibacterial, antifungal, and antiseborrheic shampoos. Additionally, topical therapies are available in numerous formulations, including crème rinses, sprays, mousses, lotions, and wipes, which makes finding one that will work for the pet an easy task.

A number of factors come into play when deciding whether to treat topically or systemically. They include the following:

- size of the affected area;
- type and severity of infection;
- size, breed, and coat type of the affected animal;
- the patient's overall health and how that might affect ease of bathing or speed of healing; and
- the owner's ability and willingness to apply topical treatments.

Mild superficial or localized infections often respond well to topical therapies. A randomized, blinded, antibiotic-controlled study published in 2015 in *Veterinary Dermatology* found that cases of methicillin-



Photo courtesy Wayne Rosenkantz

Abdominal self-induced hair loss and rash from environmental allergies in a domestic short-haired cat.

susceptible and methicillin-resistant *Staphylococcal* infections responded to twice weekly bathing and daily treatment with a topical four percent chlorhexidine solution.

Barrier defects may also be factors in the development and perpetuation of atopic dermatitis. Many patients with allergic dermatitis suffer from defects in the barrier function of the epidermis. Those defects lead to increased transepidermal water loss, causing skin to become very dry, Dr. White says. Itching and irritation follow.

Skin barrier defects also contribute to an increased number of infectious organisms that overgrow on the skin and gain entrance on the more permeable skin surface, making infections more likely. When

allergens and irritating substances find their way beneath the epidermis, patients develop more itching associated with their allergic dermatitis.

Topical therapies are helpful in addressing itching caused by allergies, infections, and skin barrier defects. “There’s been a huge improvement in different types of topical products for pets with allergic disease, bacterial infections, and yeast infections,” says Wayne Rosenkrantz, DVM, DACVD, at Animal Dermatology Clinic in Tustin, Calif. “In an uncomplicated allergic patient without skin infections, we often use moisturizing shampoos that improve moisture content and barrier function of the skin. These products can also remove surface allergens that promote the allergic reaction.”

These products often contain ingredients such as ceramides and phytosphingosine—popular in human skin care as well—and other moisturizing agents to keep skin hydrated and reduce irritation. Ceramides and phytosphingosine are lipids that are components of the skin barrier, along with cholesterol and fatty acids. When added to skin care products, they can help to strengthen the skin barrier, making it more difficult for irritants to invade; improve the skin’s ability to stay hydrated; prevent bacteria and yeast from overgrowing; and fight inflammation.

Products such as colloidal oatmeal or oatmeal-based shampoos available without a prescription can also help to restore hydration and reduce skin inflammation. They probably won’t do much for severely atopic patients if they are the only thing being used, but they can be a good adjunct while determining what an animal needs to control an allergy long-term.

For animals with *Staphylococcal* infections, products containing chlorhexidine are helpful. Often they are combined with anti-yeast agents for pets with yeast or *Malassezia* infections. Other antibacterial agents include ethyl lactate or lime sulfur. For a different type of itch, chlorhexidine and lime sulfur have some antifungal properties as well.

Benzoyl peroxide is antibacterial, but it can be drying, so it should be avoided in patients with skin that is already dry and irritated. However, for patients with greasy or scaly hair coats, it can be a good choice. Salicylic acid is another antiseborrheic agent.



Photos courtesy Amelia G. White

With the right shampoos or other topicals, patients can be bathed weekly or even daily.

Reducing resistance

As a rule, topical therapy is preferred to systemic therapy because there are fewer issues with antimicrobial resistance, Dr. Rosenkrantz says. The ability to control a bacterial infection by more frequent bathing and other topical therapy is optimal.

“Sometimes we have no choice, though, because the infections are not going to respond and we may have to select systemic antimicrobials, either based on cytology or culture and sensitivities,” he says. While topical therapy isn’t immune to resistance, it’s a less common issue compared to systemic use of antimicrobials.

Allergic animals with mild to moderate infections who are otherwise healthy can respond completely to topical therapy—but only with good owner compliance. When an infection is diagnosed, White recommends reaching first for a medicated shampoo instead of cephalexin or an



[Left] Antibiotic-resistant infection on hock of a young hunting dog with allergies.

[Right] The same dog six weeks later after being treated topically twice daily.

antibiotic injection. Frequent bathing or other application of products is time-consuming, but when she explains the benefits for both pets and humans, owners see the value in topical therapy.

For one, patients who receive antibiotic after antibiotic for skin infections may eventually no longer respond to the drugs. Reducing antibiotic use promotes human safety as well.

While humans don't typically become infected with the *Staphylococcal* bacteria that causes dog infections, which is called *Staphylococcus pseudintermedius*, they do get *Staphylococcus aureus*. And the bacteria between dogs and humans can share antibiotic resistance genes.

For instance, if a client's dog has a bad infection and is sleeping on the client's bed and being petted frequently by the client, who then touches their own face or eats or drinks without practicing good

hygiene, the client is intimately associated with that dog and their bacteria are intimately associated as well. If the dog's bacteria are resistant because he's been treated with antibiotic after antibiotic after antibiotic, they could teach the owner's bacteria to become resistant, too. Down the road, if the owner needs antibiotics, they might not work for him.

"Once you make them aware, they understand the value in the topical therapy and they're going to be much more compliant because they don't want to harm their pet unintentionally and they want to keep themselves and their family safe as well," White says.

Bathing benefits

Besides being the vehicle for delivering medication and other substances, a bath has more basic benefits: it helps to reduce or remove

allergens trapped on the skin's surface and in the hair coat. It's easy for environmental allergens to become entrapped in fur, then penetrate the skin and create inflammation. Washing them off may help to slightly reduce allergen exposure and bacterial and fungal numbers.

But more important, perhaps, a cool or tepid bath feels good. Water itself is moisturizing, especially when combined with an emollient shampoo or rinse, but the temperature used is important. Cool water has a direct effect on reducing itchiness, in both animals and humans, but hot water promotes pruritus.

Frequency of bathing can be important, too. Some clients may believe bathing too frequently dries out skin. Yet, with the right shampoos or other topicals, patients can be bathed weekly or even daily.

"Most of our patients with an inflammatory skin disease, regardless of cause, usually can benefit from bathing at least once a week," Rosenkrantz says. "We have had patients with resistant staph infections where we bathe them daily or every other day with chlorhexidine. In some cases, we've even used diluted bleach rinses and other topical disinfectants to follow up and control staphylococcal overgrowth." Spray-on or leave-on mousses or rinses, as well as wipes containing chlorhexidine, can be applied in conjunction with baths or between baths.

Things to consider

Check for infection if an allergic animal who has been doing well flares. If not identified and treated early, infection can cause pets to become itchier.

Keep the patient in mind. Cats typically don't enjoy sprays or shampoos, but many will tolerate mousse or a wipe because it feels as if the owner is grooming them.

Dogs are usually more amenable to topical applications, although some may be fearful about having their paws touched or dislike the hiss of a spray or mousse. And a spray may not effectively reach the skin of a dog with a thick, heavy coat.

Take the client's abilities into account. Not every owner is able to hoist a large dog into a bathtub daily or even weekly. Some clients may not have the hand strength to pump spray bottles or open containers.

Pets may have contact reactions to topical therapies. Ask clients to watch for and report such issues. Whether treatment is going well or poorly, the pet owner should tell you. If you know it's not going well, you can recommend other topical approaches in a different formulation.

Money is a factor. If a client isn't able to properly apply the product or the pet resists the application, the treatment won't be effective and clients will be out money they may not be able to afford.

And finally, evaluate every case individually. No two cases are exactly the same. ●

Breed predispositions

Genetics certainly plays a role in development of allergies, says Wayne Rosenkrantz, DVM, DACVD, at Animal Dermatology Clinic in Tustin, Calif. There's direct and indirect evidence to suggest heredity is a factor, but environment contributes as well, he says.

In dogs, breeds with heavy representation of allergies include all the terrier breeds, golden and Labrador retrievers, boxers, German shepherd dogs, Chinese shar-peis, Dalmatians, and bulldogs, to name a few. In addition, cocker spaniels get allergies, but also their own subset of diseases such as seborrhea, which can lead to bacterial and yeast overgrowth.

Another breed Dr. Rosenkrantz sees more frequently now for allergies is the French bulldog. "We've seen many, many Frenchies with atopic dermatitis, and they can be very difficult and refractory to therapy."

All breeds of cats can develop atopic dermatitis syndrome, Rosenkrantz says, with Abyssinians and Siamese seen in slightly higher numbers. Siamese and Siamese crosses also tend to be more predisposed to food allergies. ●