


ASK THE EXPERT

# TOPICAL TREATMENT OF PYODERMA

---

**Darren Berger, DVM, DACVD**  
*Iowa State University*



**T**opical therapy for superficial pyoderma has been available for decades in veterinary medicine. With the emergence of methicillin-resistant *Staphylococcus* spp infections,<sup>1</sup> there is renewed emphasis on topical therapy as a monotherapeutic option rather than only a complement to systemic antimicrobials.

**YOU HAVE ASKED...**

## How do I treat pyoderma topically?

**THE EXPERT SAYS...**

Topical treatment is an effective primary option for focal and generalized superficial pyoderma. Topical therapy offers several advantages, including:

- ▶ More rapid lesion resolution
- ▶ Minimal adverse events
- ▶ Avoidance of antimicrobial exposure to bystander organisms in other organs
- ▶ Potentially safer and more cost-effective therapy in cases of multidrug-resistant infections
- ▶ Decrease in duration of antimicrobial administration when used in conjunction with systemic therapy<sup>2</sup>

As a result, there is growing interest in the veterinary community about how to appropriately implement topical therapy in patients.

**How Do I Choose the Correct Topical Treatment Option?**

It is important to individualize therapy for each patient and owner to maximize effectiveness and compliance. Two main factors—patient characteristics and product selection—should be assessed before pursuing topical therapy. Comprehension of inherent patient or owner constraints is as important as correct product selection. Key aspects to keep in mind when recommending topical therapy include:

- ▶ Patient size, temperament, and hair coat

- ▶ Infection site and severity
- ▶ Sufficiency of a single product to treat infection sites or the need for multiple products
- ▶ Ability and probability of the owner performing recommended treatments
- ▶ Owner involvement in product selection to improve willingness to perform recommended treatments

Product selection should involve the following questions:

- ▶ What is the effective active ingredient (*Table 1*)?
- ▶ What method of application will best reach the site of infection?
- ▶ How much contact time is required?
- ▶ Does the product provide residual activity?

**Which Product is Best?**

A review of topical therapies concluded that the best evidence of efficacy in cases of pyoderma exists with products containing either chlorhexidine or benzoyl peroxide.<sup>3</sup> Studies have also indicated that a higher concentration of the active ingredient is not always better.<sup>4,5</sup> These studies highlight the importance of formulation as it relates to antimicrobial activity of specific products. The concentration of chlorhexidine and benzoyl peroxide recommended at this time is 2% to 3% for both agents.<sup>3</sup>

Multiple products from numerous manufacturers are available for use in veterinary medicine. It is important to note the lack of efficacy and comparative studies for most of these products. Many companies rely on in vitro data to support the active ingredient choices. Additionally, most topical products are not approved as drugs through federal agencies. Formulation, potency, stability,

TABLE 1

## COMMON ACTIVE INGREDIENTS FOR MANAGEMENT OF SUPERFICIAL PYODERMA

Active Ingredient	Advantages	Disadvantages
Acetic acid and boric acid combinations	Keratoplastic, keratolytic, and astringent activities	Skin irritation Questionable efficacy
Benzoyl peroxide	Comedolytic (follicular flushing) Degreasing	Bleaching Drying and irritating at higher concentrations (ie, >3%)
Chlorhexidine	Residual activity Not inactivated by organic debris Available in a wide array of formulations and concentrations	May slow wound healing Ocular irritant Contact hypersensitivities
Ethyl lactate	Mild follicular flushing and antiseborrheic activity Nondrying	Questionable efficacy
Hypochlorous acid	Development of resistance unlikely Mimics natural products produced by neutrophils	Frequent application needed Use may be limited to focal lesions
Mupirocin	Good wound penetration Chemically unrelated to any other antibiotic Excellent spectrum of activity against gram-positive cocci	Staphylococcal ( <i>S aureus</i> ) resistance has been reported; prolonged use should be avoided Nephrotoxicity concerns regarding polyethylene glycol base Formulations limited to ointments
Nisin	Activity against methicillin-resistant <i>Staphylococcus</i> spp Available in large wipes	Effect may be muted in the presence of <i>Malassezia</i> spp
Silver compounds	Enhances epithelialization Good efficacy against <i>Pseudomonas</i> spp	Contact and hypersensitivity reactions Impedes granulation
Sodium hypochlorite (bleach)	Broad spectrum of action, including multidrug-resistant strains of bacteria Inexpensive	Potential to discolor clothing, furniture, and carpet Skin irritation

efficacy, and safety of all available products are not always known. Thus, it has been suggested that products should be obtained from reputable companies with active research departments.<sup>3</sup>

### **Which Formulation Should I Use?**

In the past, delivery methods were limited. Currently, there are numerous options to facilitate application of topical antimicrobial agents to the site of infection (eg, shampoos, leave-on conditioners, ointments, gels, creams, rinses, wipes, sprays, mousses). The most appropriate specific application is primarily based on the location and extent of the infection.

Shampoos are best in cases of generalized pyoderma involving the patient's trunk and proximal extremities. In dogs with long or thick coats, clipping may be required to improve contact at the infection site. When a medicated shampoo is used, it is imperative that the owner understands the importance of contact time before rinsing. For most active ingredients, a minimal contact time of 10 minutes is preferred.<sup>2</sup> Spot treatments (eg, ointments, gels, liquids) work best for focal lesions and hairless areas; wipes are ideal for intertriginous areas

(eg, facial folds, lip folds, interdigital areas, perivulvar region); and sprays are beneficial for focal lesions or sparsely haired areas (eg, abdomen, ventral thorax, axillary area). Mousses offer a unique advantage in that they can be applied everywhere and used for either focal or diffuse disease; these products are an attractive option for cats averse to bathing.

### **How Often Should These Products Be Applied?**

Bathing should be performed 2 to 3 times a week when used as monotherapy but can be performed daily. Frequent bathing should be continued for 7 days past resolution of clinical signs associated with the infection.<sup>2</sup> Frequency may be decreased slowly over time. In cases of recurrent pyoderma, bathing may need to be continued weekly until the underlying cause is managed.<sup>1</sup> In cases of canine atopic dermatitis, bathing may be continued indefinitely on a weekly to biweekly basis to prevent flare-ups in a patient's condition.

Other therapies (ie, sprays, wipes, gels, lotions) should ideally be applied once or twice a day until clinical resolution; these may be used twice a week for prevention purposes. It has been suggested that a minimum contact time of 10 minutes also applies to these products. To help adhere to these guidelines and prevent removal by the patient, the products may be applied at times when the patient can be distracted via walks or feeding.<sup>1</sup>

Bleach soaks are being used as a treatment option in some cases of multidrug- or methicillin-resistant infections. When performed, soaks are recommended 2 to 4 times a week for 10 to 20 minutes using

---

**For most active ingredients, a minimal contact time of 10 minutes is preferred.<sup>2</sup>**

a 0.06% to 0.19% bleach solution.<sup>6,7</sup> Dilutions at the higher end of this concentration range are more likely to result in skin irritation. After soaking, bathing with a moisturizing or humectant shampoo is recommended to help prevent skin irritation and bleaching of the hair coat or household items.<sup>1,6,7</sup> In addition to diluted household bleach, veterinary-marketed shampoos containing sodium hypochlorite as an active ingredient are available.

An alternative to bleach soaks may be a 0.011% hypochlorous acid containing solution marketed for topical treatment in veterinary medicine.<sup>8</sup> However, a recent pilot study evaluating this product failed to demonstrate efficacy in treating canine pyoderma when used twice

**The most appropriate specific application is primarily based on the location and extent of the infection.**

a day.<sup>8</sup> Anecdotal evidence suggests the product may be more beneficial when applied to more focal lesions compared with generalized disease and when frequency of application is increased. ■

## References

1. Jeffers JG. Topical therapy for drug-resistant pyoderma in small animals. *Vet Clin North Am Small Anim Pract.* 2013;43(1):41-50.
2. Hillier A, Lloyd DH, Weese JS, et al. Guidelines for the diagnosis and antimicrobial therapy of canine superficial bacterial folliculitis (Antimicrobial Guidelines Working Group of the International Society for Companion Animal Infectious Diseases). *Vet Dermatol.* 2014;25(3):163-175.
3. Mueller RS, Bergvall K, Bensignor E, Bond R. A review of topical therapy for skin infections with bacteria and yeast. *Vet Dermatol.* 2012;23(4):330-341.
4. Lloyd DH, Lamport AI. Activity of chlorhexidine shampoos in vitro against *Staphylococcus intermedius*, *Pseudomonas aeruginosa* and *Malassezia pachydermatis*. *Vet Rec.* 1999;144(19):536-537.
5. Kloos I, Straubinger RK, Werckenthin C, Mueller RS. Residual antibacterial activity of dog hairs after therapy with antimicrobial shampoos. *Vet Dermatol.* 2013;24(2):250-e54.
6. Pariser M, Gard S, Gram D, Schmeitzel L. An in vitro study to determine the minimal bactericidal concentration of sodium hypochlorite (bleach) required to inhibit methicillin-resistant *Staphylococcus pseudintermedius* strains isolated from canine skin. *Vet Dermatol.* 2013;24(6):632-634.
7. Bloom P. Canine superficial bacterial folliculitis: current understanding of its etiology, diagnosis and treatment. *Vet J.* 2014;199(2):217-222.
8. Udenberg T, Griffin C, Rosenkrantz W, et al. Efficacy of 0.011% topical hypochlorous acid for the treatment of canine superficial pyoderma [abstract of NAVD Forum, April 2015 Nashville, TN]. *Vet Dermatol.* 2015;26:133-159.



ADVERSE REACTIONS TO FOOD

Taking purity to the next level

**NEW & IMPROVED**  
Prescription Diet® z/d\*

Clinically proven to improve GI signs in 21 days and dermatitis signs in 30 days

Crafted with highly hydrolyzed chicken protein and a single purified carbohydrate source

Rich aroma, color and new kibble shape dogs can't resist

COMING SOON



HillsVet.com

©2016 Hill's Pet Nutrition, Inc. ®/™ Trademarks owned by Hill's Pet Nutrition, Inc.