

Judicious Use of Antibiotics in Dermatology



In the millennia before the advent of antibiotic therapy, the leading cause of human mortality was infectious disease. We must view antibiotic drugs as precious lifesaving materials and thus exercise judicious use when prescribing such agents to avoid a contribution to the mounting global threat of antibiotic resistance. Herein, the appropriate use of antibiotics in dermatology is discussed as well as ways to promote good antibiotic stewardship to patients.

Ted Rosen, MD

What does your patient need to know at the first visit? Does it apply to patients of all genders, ages, and races?

There are 3 scenarios in which antibiotics are used in dermatology. First, there is the treatment of a bona fide, verified skin infection, which may range from the relatively simple (impetigo) to the complex (botryomycosis) to the exotic (fish tank granuloma). The second scenario is antibiotic administration, often due to ancillary properties such as anti-inflammatory effects, in the management of noninfectious disorders, such as familial benign pemphigus or pityriasis lichenoides et varioliformis acuta. I try hard to avoid antibiotic use in these situations unless all else fails. The third scenario involves use of antibiotics at the patient's request, usually associated with the phrase "just in case it's infected." In my opinion, this practice is completely ill advised.

Male and female patients of all ages, ethnic origins, and socioeconomic backgrounds are woefully uninformed regarding the promise and peril of antibiotics. I want patients to buy into the concept of good antibiotic stewardship. Thus, patients should understand that there must be a specific and justifiable reason for antibiotic use and that the recommended dose and duration of treatment should not be altered. In some situations, antibiotic therapy is intended to be of short duration, while in other

situations, such therapy may be quite protracted. Patients also need to know at the outset of treatment when we plan to transition from a short-term, antibiotic-based modality to a long-term nonantibiotic maintenance regimen, which is especially true for acne and rosacea. I try to limit antibiotic use in these disorders to 3 months. Furthermore, patients should always be educated about the potential side effects associated with the particular antibiotic being prescribed. Hoarding and sharing leftover antibiotics should be strongly and explicitly discouraged.

Finally, patients must be educated that taking shortcuts when prescribing antibiotics may lead to therapeutic failure, worsening disease, or serious long-term adverse consequences. For example, rational antibiotic use may require the added expense of an initial and/or subsequent test-of-cure culture and sensitivity. Is that swollen and tender hand following a cat bite due to *Pasteurella multocida* or methicillin-resistant *Staphylococcus aureus*? Is that new eruption in an atopic patient due to secondary impetigo or eczema herpeticum? Other laboratory testing also may be required, such as a follow-up serology after treating syphilis. Patients need to know why laboratory tests are being ordered and how the tests complement direct antibiotic intervention.

What are your go-to treatments? What are the side effects?

I am a fan of subantimicrobial-dose doxycycline for both rosacea (on label) and acne (off label). Studies have shown that neither quantitative nor qualitative changes occur in the cutaneous, oral, or gastrointestinal flora. Thus, I avoid contributing to

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the emerging global crisis of antimicrobial resistance. I am also a proponent of topical antibiotics whenever appropriate and reasonable. Mupirocin and retapamulin, for example, are quite effective for routine cases of impetigo. When incision and drainage alone are insufficient to resolve methicillin-resistant *S aureus* furunculosis, I prefer either trimethoprim-sulfamethoxazole or doxycycline. Of course, other specific oral and even parenteral antibiotics are appropriate for select disease states.

Although antibiotics generally are well tolerated, there are many possible side effects. Hypersensitivity reactions, ranging from self-limited fixed drug and pruritic maculopapular eruptions through acute urticaria to anaphylaxis, may occur with any antibiotic. *Clostridium difficile*-associated diarrhea also may occur in conjunction with the use of any antibacterial drug, especially those with a broad spectrum of activity. Nausea and headache are mild but common side effects of these agents. All tetracycline derivatives may be photosensitizers and may provoke intracranial hypertension. Minocycline may lead to hyperpigmentation of skin and teeth, vestibular disturbances (ie, dizziness, ataxia, vertigo, tinnitus) and rarely autoimmune hepatitis. Macrolide antibiotics have been linked to serious cardiotoxicity, and quinolone antibiotics have been linked to tendonitis/tendon rupture, cardiotoxicity, and insomnia. Many antibiotics can result in vaginal yeast infections. There is some evidence that prolonged antibiotic use may precipitate inflammatory bowel disease, especially in those who are genetically predisposed.

Finally, keep in mind that antibiotic administration changes the normal cutaneous flora, which may interfere with the normal antimicrobial and anti-inflammatory homeostatic roles played by resident skin microflora. Antibiotic administration also changes the gut flora and, in this manner, may help promote the development of resistant microbes.

How do you keep patients compliant with treatment?

The most important step to assure adherence is adequate pretreatment education. Whether short-term or long-term antibiotic treatment is anticipated, I always schedule a follow-up office visit in approximately 2 weeks to check on clinical progress and reinforce good habits. Younger patients benefit from periodic reminders using emails, text messages, and tweets.

What do you do if they refuse treatment?

In some instances, antibiotic phobia in patients can be totally accepted and alternative treatments explored. As an example, laser and light therapy, hormonal manipulation, zinc-based nutritional supplements, and intensive nonantibiotic topical combination drugs can supplant antibiotics for the management of acne.

What resources do you recommend to patients for more information?

There are some excellent resources online for patients such as “Using Antibiotics Wisely” and “Get Smart: Know When Antibiotics Work.”

SUGGESTED READINGS

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