

Managing Patient Expectations in Acne Treatment

Just as important as prescribing appropriate medications, patient expectation management is critical in treating patients with acne.

BY LAWRENCE SAMUELS, MD

Acne affects both sexes and all ethnic groups. In fact, the condition affects at least 85 percent of adolescents and young adults to some degree; it is estimated that 40 to 50 million people in the US have acne. Research also shows that a large number of women over age 25 have acne, and the prevalence of acne remains constant until age 44, at which time there is a decrease in its incidence.¹

It is important to understand the epidemiology and causes of acne and oily skin to appreciate the new science and treatment available today. Due to the high cost of doctor visits and prescription medications, the use of over-the-counter acne medications is increasing. Initiation of effective treatments as early as possible is associated with improved patient experiences, better outcomes, and lower cost. At the same time, it is important to identify treatment regimens that optimize efficacy and tolerability to promote therapeutic adherence. There is growing concern about bacterial resistance to oral antibiotics, which requires dermatologists to be judicious when prescribing oral and topical antibiotics for acne. It is important for the dermatologist to be aware of the products, medication interactions, and scientific data regarding acne treatments. However, there are many acne products, especially those with essential oils and vitamins other than retinol and retinoic acid, that have very little scientific support. Doctors must understand the potential benefits and limitations of the vast array of acne treatment products.^{1,2}

DEMAND AND EXPECTATIONS

Patient demand for acne therapy is expected to increase in coming years, which highlights the need for effective, well-

TAKE-HOME TIPS

The use of over-the-counter acne medications is increasing. Initiation of effective treatments as early as possible is associated with improved patient experiences, better outcomes, and lower cost. Monotherapy for acne has limitations compared to combination therapies in all acne patient studies.

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tolerated, low-cost treatments. Acne can substantially impact a patient's quality of life (QOL). Patients with moderate or severe acne generally have higher levels of behavioral and emotional difficulties than those with clearer skin. The most prominent psychological impact of acne on patients is lower self-confidence, as well as reduced self-esteem and self-image. In a study of patients with acne, females scored worse on the Dermatology Life Quality Index than did males, in contrast to improved scores after successful treatment in both sexes.³ The rate of poor adherence was highest among patients prescribed a combination of systemic and topical therapy. Usually patients were non-adherent with oral medications. Factors that correlate with treatment adherence include simple topical treatment, clinical improvement, and improved QOL. The psychosocial impact of this skin condition should never be underestimated.

Patient expectations are a critical step when initiating therapy

for acne. Realistic expectations and timelines for improvement will encourage patient compliance. Typically, mild acne will improve 30 to 50 percent in 12 weeks and 60 percent or better by 26 weeks. Moderate acne will improve 20 to 40 percent in 12 weeks and 50 percent or better by 26 weeks. The treatment of acne vulgaris is a long-term process that must be individualized for each patient. The two most important factors for the initial treatment of acne are skin type and acne severity.¹⁻³

ETIOLOGY

The cause of acne is multifactorial. Female and male hormones that impact the pilosebaceous gland are in higher concentrations after puberty. Also, stress can influence hormone levels, aggravating acne. The association between diet and acne is controversial at every level. There is weak evidence that high dairy intake and high glycemic index dietary habits increase acne activity.⁴ Physicians should always listen to their patients and support the patients' dietary restrictions or supplementations based on their food diaries or experience.

Our understanding of the pathophysiology of acne has improved, but the exact mechanisms are yet to be elucidated. There are four major pathogenic factors of acne. Altered keratinization and abnormal skin cell growth in the pore create a dead skin cell/protein/lipid complex that plugs the pilosebaceous gland (microcomedone). Abnormal sebum production and swollen sebaceous glands are present in acne-prone individuals. Also, the composition of free fatty acids secreted by acne-prone individuals differs from those in acne-free individuals. Sebum contains a mixture of cholesterol, free fatty acids, fatty alcohols, triglycerides, wax esters, sterol esters, and squalene.⁵ The best indicators of sebaceous activity are levels of wax esters and squalene, as they are unique to sebum and sebocytes. Abnormal bacterial colonization (*propionibacterium acnes*) in the pilosebaceous unit occurs in acne-prone individuals. *P. acnes* produce hyaluronidases, lipases, and neutrophil chemotactic factor proteases, resulting in inflammation and tissue injury. *P. acnes* create a glycocalyx biofilm in the pore, which adds to the formation of the microcomedone. Lastly, an exaggerated immune and inflammatory response to microcomedones, sebum, and follicular bacteria produces papules, pustules, nodules, and cysts in acne-prone individuals.

PATHOPHYSIOLOGY

Recent evidence suggests that inflammation rather than abnormal keratinization creates a microcomedone. However, in either case, the initial lesion in acne is the comedone. A comedone starts in the pilosebaceous gland as an expanding mass of cellular debris, keratin protein, and lipid material. Bacteria (*propionibacterium acnes*) populate the blocked pilosebaceous gland and produce an inflammatory response by their lipolytic activity within the plugged pilosebaceous unit. This begins the

development of small, red papules. As it grows in size, the follicle wall thins and the follicle itself dilates (stretches and swells). Comedones become inflamed when the follicle wall is ruptured, which releases small amounts of cellular and lipid material into the dermis (papules and pustules). Release of all the bacteria and cellular and lipid material in a single comedone produces a full inflammatory response (nodules and cysts).

ACNE TREATMENT INGREDIENTS

Benzoyl peroxide kills the bacteria that cause acne and oxidize the oils on the surface of the skin produced by the oil glands (sebaceous glands). Some patients are sensitive to benzoyl peroxide and a few develop an allergic skin reaction, which includes redness, itching, stinging, and sometimes swelling of the skin.⁶ Its strong oxidative properties can bleach hair and clothing, as well as create sun sensitivity in some patients. In addition, benzoyl peroxides may oxidize other acne medications rendering them ineffective. Most importantly, studies indicate that there is a synergistic effect, improving acne when benzoyl peroxides are combined with other compatible anti-acne ingredients, but these are only available by prescription.⁶⁻⁹ A study found that dryness and irritation associated with a clindamycin/benzoyl peroxide (5%) fixed combination treatment often led to non-adherence among patients. Benzoyl peroxide products are in acne washes, leave-on products, and spot treatments.

Salicylic acid is an organic, beta hydroxy acid, which is a natural plant-derived ingredient. It causes cells of the stratum corneum to shed more rapidly, preventing pores from clogging and allowing space for new cell growth. This helps reduce and prevent blackheads. Salicylic acid is found in acne cleansers and topical acne treatments and is less irritating than benzoyl peroxide. It is designed to cleanse, exfoliate, and prepare the skin to make other anti-acne ingredients more effective. Although it reduces bacteria and excess oil from the skin, its major corrective effect is correcting abnormal keratinization.¹⁰

Alpha hydroxy acids are used to treat acne, as they have desquamating (comedolytic) and antibacterial properties. The efficacy of glycolic acid is related to the free-acid concentration; it can be combined with salicylic acid to enhance the desquamation of keratin plugs and reduce blackhead formation. Glycolic complex is a combination of glycolic acid and alpha lipoic acid, designed to utilize the benefit of two ingredients in one product. The major effect is eliminating abnormal keratinization. Glycolic acid is found in acne cleansers and leave-on products.¹⁰

Superficial glycolic acid and salicylic acid peels are used to treat acne. They create exfoliate corneocytes by disrupting connections between keratinocytes,—reducing microcomedones.¹⁰

A variety of over-the-counter and prescription retinoids are available to treat acne. These products are transported into keratinocytes, normalizing follicular keratinization-reducing blackhead formation. Retinol is the most effective over-the-

counter retinoid available to treat acne. Retinoic acid (tretinoin), adapalene, and tazarotene are other retinoids used to treat acne, but they are only available with a prescription. They have significant keratolytic effects on the stratum corneum.¹⁰

Dapsone is a sulfone, which has been shown in several in vitro studies to have anti-inflammatory effects. Results show multiple effects that mediate cutaneous inflammation.¹¹ Azelaic acid is a naturally occurring dicarboxylic acid with anti-inflammatory, antimicrobial, anti-keratinizing, antioxidant, and anti-tyrosinase mechanisms of action. Its benefits are well documented in the treatment of acne, rosacea, and post-inflammatory hyperpigmentation and is used to treat acne in Europe. In lower concentrations, azelaic acid can be obtained without a prescription, and when combined with other anti-acne products, can eliminate acne and hyperpigmentation.¹²⁻¹⁶

Sulfur is the oldest acne medication. It has antibacterial, comedolytic, and anti-inflammatory properties. The mechanism of action is not completely understood, but it is thought that conversion of sulfur to hydrogen sulfide produces a keratolytic effect. Micronized, elemental sulfur or sodium sulfacetamide has antibacterial properties, which are responsible for its ability to eliminate active acne lesions. A worry for some is that an allergy to sulfa drugs may create problems with products that contain natural, elemental sulfur. No one is allergic to natural, elemental sulfur; the sulfur atom is not allergenic. Sulfa drugs are more appropriately labeled sulfonamides. Though also not allergenic, sulfonamides have the ability to form sulfonamide-protein complexes that can be allergenic in some individuals. Natural, elemental sulfur cannot form these allergenic complexes. Elemental sulfur's major corrective effect is antibacterial.

Allantoin is a diureide of glyoxylic acid and is a natural botanical extract of the comfrey plant. It has keratolytic effects. It forms complexes with irritating sebum and sensitizing bacteria that cause excess oil production and acne lesions. Controlling skin surface oil and reducing skin bacteria promotes skin healing. Allantoin reduces abnormal keratinization and reduces bacterial colonization in the pilosebaceous unit, but its major corrective effect is eliminating abnormal sebum (oil) production.

The most commonly used topical antibiotics, clindamycin and erythromycin, have anti-*P. acnes* activity. Some studies suggest they have anti-inflammatory properties, but they are associated with the development of bacterial resistance.

TREATMENT

As a multifactorial disease, acne requires a multifaceted approach to therapy. Establishing an accurate assessment of acne is essential for developing a treatment strategy and evaluating treatment success. The establishment of realistic treatment expectations is critical. Monotherapy for acne has limitations compared to combination therapies in all acne patient studies.¹⁷ Clinicians need to be aware of new treatments

in order to create the best topical regimen for patients with mild-to-moderate acne vulgaris. It should be evident that using several active ingredients, which work together addressing the various causes of acne, produce better and faster results.¹⁸

A simple regimen with effective products and good tolerability will improve adherence and result in clinical improvement. Treatment of acne is directed at reversing the pathologic process. The mechanism of action of each medication and its ability to address one or more of the causes of acne needs to be evaluated when creating a treatment program. Therefore, treatment must contain products that prevent abnormal epidermal cell growth (abnormal keratinization), normalize and enhance skin exfoliation at the opening of the pore, kill the bacteria in the pore, reduce the exaggerated inflammatory response, and control abnormal and excessive sebum production.

Treatment is designed to heal active lesions and prevent their formation, which prevents acne scarring. True scarring must be distinguished from erythematous or hyperpigmented spots that can result from inflammatory acne. Acne should be treated aggressively to prevent permanent scarring. The treatment of acne requires the use of scientifically advanced skin care products and clinical experience, and perhaps equally as important, the dermatologist's ability to successfully manage patient expectations throughout the treatment process. ■

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