

Acne Vulgaris, II: Treatment

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GOAL

To provide the therapeutic options for treating mild to severe acne

OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Describe the topical agents indicated for patients with acne.
2. Delineate the role played by oral treatment of acne.
3. Identify which acne treatments can be provided in the office setting.

CME Test on page 97.

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Treatment of acne vulgaris is based on a current understanding of the pathogenic factors. Effective management can be achieved for each individual patient using a variety of the powerful weapons in our therapeutic arsenal.

Treatment

The goals of acne treatment are to lessen physical discomfort from inflamed acne lesions, improve appearance, prevent or minimize potential adverse psychological effects, and minimize any scarring.

Management consists of treating lesions and preventing new lesions from developing (Table).

Topical Treatment

Topical treatment is indicated for patients with noninflammatory comedones or mild to moderate inflammatory acne. Medications used in topical treatment may act primarily against comedones (comedolytic agents) or inflammatory lesions (antibacterials and antibiotics).

A principal goal of therapy should be reduction or elimination of the precursor of all acne lesions—microcomedones. Tretinoin, an effective comedolytic agent, reverses abnormal follicular keratinization, which affects not only microcomedones but also the more mature open and closed comedones. Tretinoin also reduces the number of inflammatory lesions and improves the appearance of postinflammatory hyperpigmentation in black patients. Topical application of tretinoin can lead to local irritation

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Summary of Therapies and Their Use for Management of Acne

Severity and Type of Acne	Recommended Treatment
Comedonal acne	Topical retinoid at lowest strength initially, then increased as tolerated
Mild acne Papules/pustules—few to several Nodules—none	Topical retinoid at night and topical benzoyl peroxide in the morning; benzoyl peroxide clindamycin; benzoyl peroxide and erythromycin For women, consider hormonal therapy
Moderate acne Papules/pustules—several to many Nodules—few to several	Topical retinoid and/or oral antibiotic initially At 6 months, if <50% improvement and/or scarring, consider isotretinoin For women, consider hormonal therapy
Severe acne Papules/pustules—numerous or extensive Nodules—many	Consider a short trial of oral antibiotic Isotretinoin is treatment of choice, especially after other treatment failure or scar formation or in case of psychological distress For women, also consider hormonal therapy

(erythema, peeling, burning); the stronger the preparation, the greater the risk for irritation.

Adapalene, a topical retinoid that is more effective than tretinoin 0.025% gel and that is associated with a lower incidence of irritation,¹ produces more erratic results. Tazarotene, the newest topical retinoid, is highly effective but also can be irritating.

Results of using azelaic acid (not a retinoid) in acne treatment have, in general, been disappointing.

Benzoyl peroxide (BP) is an oxidizing agent that is bactericidal for *Propionibacterium acnes*. Topical application of BP results in decreased *P acnes* counts and improvement in both noninflammatory and inflammatory lesions.²

Topical antibiotics most frequently used in inflammatory acne are clindamycin and erythromycin, which are available in a variety of vehicles and are bacteriostatic for *P acnes*. We prefer to combine these agents with BP. Clindamycin and BP combined exert a synergistic antimicrobial effect on *P acnes* and are more effective than either agent used alone; the same is true for erythromycin and BP.³

Combination topical therapy is commonly used. One of our favorite topical therapy regimens is BP plus clindamycin or erythromycin in the morning and a retinoid at night. To minimize irritation, espe-

cially in the early stage of treatment, a patient can use these agents on alternating days.

Oral Treatment

Although many patients can be treated successfully with topical medicines, many also require a course of oral therapy at some point.

Systemic antibiotics have a significant role in management of many forms of acne. These agents have 2 direct modes of action. The primary mechanism, suppression of growth of *P acnes*, reduces production of inflammatory factors. The secondary but likely equally important mechanism is direct suppression of inflammation.⁴ Antibiotics have an indirect effect on comedogenesis. In clinical trials, a 20% reduction in the noninflammatory comedo count was small but consistent.⁵ Systemic antibiotic treatments have included clindamycin, erythromycin, tetracycline, doxycycline, minocycline, and trimethoprim-sulfamethoxazole. Emergence of less sensitive strains of *P acnes* has rendered erythromycin virtually ineffective in acne treatment; the same phenomenon is occurring with the tetracyclines.

The long-term goal of acne therapy is to stop antibiotic use and rely exclusively on topical therapy. Current guidelines suggest that the use of sys-

temic antibiotics for acne should be limited to 6 months. For patients who require longer treatment, alternative therapies (eg, use of isotretinoin; use of estrogen for women) should be considered.

Isotretinoin

No review of acne therapy would be complete without a mention of isotretinoin, the only medication that affects all the important aspects of acne pathogenesis. Isotretinoin should be reserved for patients with therapeutically resistant and disfiguring acne. This criterion is often interpreted to mean nodular acne, which can produce physical and psychological scars. That interpretation, however, may be too restrictive because severe papular acne also can be resistant to therapy and disfiguring. In addition, many physicians treat patients with obvious scarring. In fact, physical or psychological scarring and inadequate response to antibiotics represent the major reason for prescribing isotretinoin. (The situation was different when isotretinoin was first introduced; the medication was prescribed mostly for nodular acne.)

Hormonal Therapy for Women

The profile of women best suited for hormonal therapy for acne consists of several characteristics—adult onset of acne, treatment failures with standard therapies, premenstrual flare-ups, history of irregular menses or ovarian cysts, increased facial oiliness, hirsutism, and androgenic alopecia.

Any serious underlying disease must be ruled out in women with a suggestive history or suggestive findings on the physical examination. With these patients, laboratory tests should be conducted at least on sulfate salt of dehydroepiandrosterone and free testosterone. For patients without significant disease, oral contraceptives (OCs), androgen receptor blockers, or both can be prescribed. Glucocorticoids also can be used to suppress adrenal androgens.

Well-designed controlled studies showed that use of an OC containing ethinyl estradiol 35 mg and triphasic norgestimate led to improvement in acne.⁶ Other OC agents also are effective. Improvement, however, often requires 2 to 4 months and is incomplete. Relative contraindications to OC use include cigarette smoking and a family or personal history of hypercoagulability.

In the United States, spironolactone is the most thoroughly studied and most widely used androgen receptor blocker. Typically, the initial dosage is 50 mg/d for 2 to 4 weeks; this dosage is increased to 100 mg/d as tolerated. Blood pressure monitoring at follow-up visits is advised, but blood work gen-

erally is not required given the minimal and usually not clinically significant degree of hyperkalemia occurring in young healthy women.⁷ A combination of spironolactone and OC is recommended, and oral antibiotics also can be used. In countries other than the United States, the antiandrogen of choice is cyproterone acetate, which can be used in an OC.

Corticosteroids are used when other hormonal therapy has failed. A low dose of prednisone (2.5–7.5 mg) or dexamethasone (0.125–0.5 mg) taken at night suppresses a morning surge of adrenocorticotrophic hormone and produces clinical improvement in some patients.⁸

Office Treatment

In our experience, comedo extraction and judicious use of intralesional steroids are essential parts of acne treatment. Comedo extraction, more easily accomplished after several weeks of topical retinoid therapy, provides a quick, though temporary, cosmetic benefit. Intralesional injections of triamcinolone acetonide 2.5 to 5 mg/mL rapidly resolve inflammatory lesions.⁹ Frank abscesses require incision and drainage. Some patients may benefit from light peeling with glycolic acid, α -hydroxy acid, and, in low concentrations, trichloroacetic acid and Jessner solution. Dermabrasion, laser resurfacing, punch grafts, and injectable fillers help improve the appearance of scars. Most recently, treatment with high intensity visible (blue) light appears to be an effective acne treatment.

Conclusion

New information about the pathophysiology of acne has led to the development of medications that are effective for most patients. However, much research is needed to define the role of androgen receptors and to elucidate the mechanism of comedogenesis on the molecular level. New insights are needed in the understanding of the immune response in acne and in the contribution of this response to the acute and chronic aspects of inflammation. For the most part, scar formation remains a mystery; why some patients scar and others do not is unknown. Perhaps the most bewildering phenomenon is that, for most patients, acne spontaneously improves and even disappears without leaving a trace.

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