

ACNE

ACNE OVERVIEW — Acne is a skin condition that causes pimples to develop. Acne is the most common skin disorder in North America, affecting an estimated 85 percent of adolescents. Effective acne treatments are available to treat existing pimples and prevent new ones from developing. In addition, cosmetic treatments can help to reduce scarring and changes in skin color caused by acne.

HOW ACNE DEVELOPS —There are four basic events involved in the development of acne lesions:

- Hair follicles become blocked with an overabundance of normal skin cells. These cells combine with sebum (an oily substance that lubricates the hair and skin), creating a plug in the follicle.
- The glands that produce sebum, known as sebaceous glands, enlarge during adolescence and sebum production increases. Numerous sebaceous glands are found on the face, neck, chest, upper back, and upper arms.
- The increase in sebum production allows for the overgrowth of a bacterium called *Cutibacterium* (formerly *Propionibacterium*) *acnes* that normally lives on the skin.
- Inflammation occurs as a result of bacterial overgrowth or other factors. This can lead to the rupture of the follicle and the formation of a red or tender pimple.

ACNE CAUSES

Hormonal changes — Hormonal changes during adolescence cause the sebaceous glands to become enlarged, and sebum production increases. In most people with acne, hormone levels are normal, but the sebaceous glands are highly sensitive to the hormones. Less often, women's hormone levels are affected by an underlying medical problem known as polycystic ovary syndrome (PCOS). Acne tends to resolve between ages 30 to 40, although it can persist into or develop for the first time during adulthood. Post-adolescent acne predominantly affects women, in contrast to adolescent acne, which predominantly affects men. Acne can flare before a woman's menstrual period, especially in women older than 30 years.

External factors — Oil-based cosmetics may contribute to the development of acne. Oils and greases in hair products can also worsen skin lesions. Water-based or "noncomedogenic" products are less likely to worsen acne. People with acne often use soaps and astringents. While these treatments remove sebum from the skin surface, they do not decrease sebum production; frequent or aggressive scrubbing with these agents can actually worsen acne.

Diet — The role of diet in acne is controversial. Some studies have found weak associations between cow's milk and an increased risk of acne, perhaps because of hormones that occur naturally in milk. However, there is no strong evidence that milk, high-fat foods, or chocolate increase the risk of acne.

Stress — Psychological stress can probably worsen acne. In several studies of students, acne severity appeared to worsen during times of increased stress.

ACNE TREATMENT — There is no single best treatment for acne, and combinations of treatments are sometimes recommended. Since acne lesions take at least eight weeks to mature, you should use a treatment for a minimum of two to three months before deciding if the treatment is effective.

Acne skin care — Skin care is an important aspect of acne treatment.

Skin hygiene — Wash your face no more than twice daily using a gentle nonsoap facial skin cleanser (eg, Cetaphil, Oil of Olay bar or foaming face wash, or Dove bar) and warm (not hot) water. Some providers recommend avoiding use of a washcloth or loofah, and instead using the hands to wash the face. Vigorous washing or scrubbing can worsen acne and damage the skin's surface. Do not pick or squeeze pimples because this may worsen acne and cause skin swelling and scarring. It can also cause lesions to become infected.

Moisturizers — Use of a moisturizer minimizes dryness and skin peeling, which are common side effects of some acne treatments. Moisturizers that are labeled as "non comedogenic" are less likely to block skin pores.

Sun protection — Some acne treatments increase the skin's sensitivity to sunlight (eg, retinoids, doxycycline) To minimize skin damage from the sun, avoid excessive sun exposure and use a sunscreen with SPF 30 or higher that is broad spectrum (blocks both UVA and UVB light) before sun exposure.

Can I treat my own acne? — If you have mild acne, you can try to treat yourself with nonprescription products initially. Nonprescription acne treatments may include salicylic acid, benzoyl peroxide, sulfur, alpha hydroxy acids, adapalene, or tea tree oil, all of which are available in nonprescription strengths. A combination of these treatments may be more effective than using one single product alone. In rare cases, people have a severe allergic reaction to acne products, so for the first three days, try them on just a small area. If you do not improve after three months of using nonprescription products or you have moderate or severe acne, consult a healthcare provider for advice on the most effective treatments.

Noninflammatory acne causes whiteheads or blackheads without redness or skin swelling

Retinoids — Topical retinoid medications are often recommended for noninflammatory acne. Examples of these medications include tretinoin (Retin-A, Avita, Atralin) and (Tazorac), which require a prescription, and adapalene (Differin), which is available both by prescription and over the counter. Retinoids are usually applied once per day, although people who develop skin irritation can reduce this to every other day or less, then increase as tolerated over time. Most people become more tolerant of retinoids over time. Most retinoids are available in a gel or cream. People with oily skin may prefer gels because they have a drying effect, while people with dry skin may prefer a cream. Retinoids can cause skin irritation. While using topical retinoids, you should apply a sunscreen with SPF 30 or greater before sun exposure.

Other acne products — People who cannot tolerate retinoids may try other topical medications, such as salicylic acid, glycolic acid, or azelaic acid (Azelex, Finacea). All of these treatments can be helpful in reducing noninflammatory acne, and azelaic acid may reduce acne-related darkening of skin.

Mild to moderate inflammatory acne with some inflammation is usually treated with topical retinoids, topical antibiotics, or benzoyl peroxide. A combination of medications, usually benzoyl peroxide with a topical antibiotic and/or retinoid (eg, tretinoin), is more effective than treatment with one agent alone.

Benzoyl peroxide — is usually applied twice per day. It may be combined with a topical retinoid, in which case the benzoyl peroxide is applied in the morning and the retinoid is applied at night. Benzoyl peroxide can irritate the skin, sometimes causing redness and skin flaking, and it can bleach clothing, towels, bedding, and hair.

Topical antibiotics — Topical antibiotics (creams or liquids) control the growth of acne bacteria and reduce inflammation.

Oral contraceptives - The hormones in combination birth control pills can help reduce acne. The pills decrease the circulation of androgens, which decreases the production of sebum. The pills must contain both estrogen and progesterin to be effective against acne.

Moderate to severe inflammatory acne may be treated with oral antibiotics or an oral retinoid known as isotretinoin (Amnesteem, Claravis, Sotret, Absorica) may be recommended. Topical medication may be used in combination with oral antibiotics.

- **Oral antibiotics** — Oral antibiotics work to slow the growth of acne-producing bacteria. However, oral antibiotics can have bothersome side effects, including vaginal yeast infections in women and stomach upset. Doxycycline and Minocycline are the most commonly prescribed oral antibiotics for acne. They cannot be used during pregnancy or in children less than nine years of age.
- **Oral isotretinoin** — Oral isotretinoin (Amnesteem, Claravis, Sotret, Absorica) is a potent retinoid medication that is extremely effective in the treatment of severe acne. It cures or significantly improves acne in the majority of patients. Oral isotretinoin is effective in treating the most disfiguring types of acne. Isotretinoin used to be sold as Accutane, but that brand name is no longer available. Oral isotretinoin is usually taken in pill form once or twice daily with food for 20 weeks, then stopped. In some cases, acne can initially worsen before it improves. To reduce the risk for this initial flare of acne, isotretinoin is sometimes given at a lower dose for the first month of treatment. After treatment is stopped, improvement can continue for up to five months. Information about oral isotretinoin can be found at the US Food and Drug Administration website.
 - **Side effects and risks** — Despite its positive effects, oral isotretinoin can have serious side effects and should be used with caution. Taking isotretinoin during pregnancy can cause miscarriage and life-threatening malformations in the baby. For these reasons, there are strict rules in the United States for healthcare providers, pharmacists, and patients regarding the use and prescription of oral isotretinoin. Prescriptions of isotretinoin are regulated by the iPLEDGE program which requires the following:
 - All women must have two negative pregnancy tests before receiving a prescription, and then they must have monthly pregnancy tests throughout the course of treatment.
 - Women who could become pregnant must fill their prescription within seven days of receiving it; after this time, a new prescription must be written.
 - Any woman who is or might become sexually active with a male partner must use two forms of birth control for at least one month before starting therapy and continue until one month after stopping isotretinoin.
 - Women who cannot become pregnant and men must also participate in iPLEDGE, but do not require pregnancy testing or use of birth control.

A variety of nonpregnancy related side effects may occur during isotretinoin therapy:

- Dryness or peeling of skin, soreness and cracking of the lips, itching, muscle pain, nosebleeds, difficulty wearing contact lenses, and sensitivity to the sun may occur during treatment.
- There is concern about the relationship between isotretinoin and depression and suicidal behavior. While there is not enough evidence to conclude that it causes depression or suicidal behavior, patients taking isotretinoin should report any sadness, depression, or anxiety to their healthcare provider.
- Isotretinoin can cause increases in blood levels of triglycerides (fatty substances related to cholesterol), liver damage, pancreatitis, and changes in the blood counts. It is unclear whether isotretinoin treatment increases the risk for inflammatory bowel diseases such as ulcerative colitis and Crohn's disease.