Acne (Acne Vulgaris)

Acne, clinically known as acne vulgaris, is the most common skin disease. It affects 85% of teenagers, some as young as 12, and often continues into adulthood. It is also called “pimples,” “zits” or “blemishes.”

What causes acne?
The skin is formed by many layers of tissue, containing hair, glands, muscles, sensory receptors and blood vessels. During puberty, a group of hormones are released called androgens. Androgens allow the sebaceous glands in the skin to produce an oily substance called sebum. Acne is in part caused by this increase in sebum that naturally occurs during puberty.

Normal amounts of sebum keep skin and hair from drying out. However, excess oil can mix with dead skin cells and clog hair follicles (the tiny tunnels that lead to the root of the hair) and pores (the opening in the skin where the hair passes through).

A common type of bacteria that lives on the skin, known as Propionibacterium acnes, sometimes contributes to acne by causing inflammation. The acne signals white blood cells to the area, which damage the tissue and cause an inflammatory response. This causes swelling and infection.

Acne leads to persistent redness and inflammation, especially on the face, scalp, back and chest, where the most sebum is produced.

Acne varies from mild to severe, depending on what kind of blemishes appear. The different types of acne include

- comedones
- papules
- pustules
- nodules

Comedones are pores that are blocked with oil and dead skin cells. They can be open (“blackheads”) or closed by the skin (“whiteheads”).

Anatomy of the skin

Acne occurs when the sebaceous glands produce more oil, clogging different parts of skin tissue.
Open comedo (blackhead)

A blackhead is generally level with the skin surface and cannot be removed by normal washing of the face.

Closed comedo (whitehead)

A whitehead is slightly raised from the skin, but there is no inflammation.
Papules are red, small, hard bumps that are slightly raised on the skin. In clusters, they can feel like sandpaper to the touch. White blood cells enter the follicle, causing inflammation.

When the white blood cells in a papule make it to the surface of the skin, a pustule is formed. Pustules appear as red, inflamed circles with a central, raised bump that is yellowish or white. The bump is filled with pus. Pus is the result of inflammation and contains white blood cells, dead skin cells and bacteria.
When a papule or pustule expands, it can cause more severe inflammation in the surrounding skin. This can lead to nodules, which are deep, red, round bumps that can have a diameter of 6 to 20 mm. They are sometimes referred to as cysts.

Nodules are formed by irritated, inflamed hair follicles that have ruptured deep under the skin. They can be throbbing and painful, even without touching.

Nodules are often large, inflamed, red, swollen, and painful to the touch.

**Psychological impact of acne**
Acne can have a profound impact on a person's quality of life, particularly for teenagers. Reactions can range from minimal distress to more significant depression, anxiety and, less commonly, thoughts of suicide or self harm. For these reasons, treating acne matters.

**Treatment of acne**
Treatment depends on the severity and type of acne. An effective treatment will help reduce future breakouts and improve the skin's appearance. Keep in mind that up to six weeks of treatment might be necessary to start noticing results.

In most cases, your doctor or dermatologist will prescribe topical treatments (applied directly on the skin). Sometimes the doctor may prescribe an oral treatment (taken by mouth).

**Cleansing skin**
Acne is a process deep within the skin. Washing your face regularly helps remove dead skin cells and excess oil, but does not play a significant role in the prevention or management of acne.

If you have acne, avoid scrubbing your face when washing, because this may worsen inflammation and irritation. Instead, gently wash your face with warm water. You may also use a mild cleansing product if you want.
Topical retinoids
Topical retinoids unplug comedones and improve the process of shedding the old cells. They may also help reduce any inflammation.

Some side effects may occur when using a topical retinoid. These include mild irritation, redness (erythema), dryness, peeling and sensitivity to sun. If you are pregnant, or thinking about having a baby, talk to your doctor or dermatologist before using a topical retinoid, as they should not be used during pregnancy.

Avoid skin damage, such as waxing or exfoliation (e.g., facials) when taking retinoids.

Common topical retinoids are available in cream and gel form. There are benefits to both creams and gels, depending on the severity of acne and the sensitivity of your skin. Retinoids are also available in many strengths and formulations. Therefore, there is no one “better” option; your doctor will recommend a retinoid most appropriate for you.

Topical antimicrobials
Topical antimicrobials are used to kill bacteria that contribute to inflammation. They also help fight inflammation directly. One option is benzoyl peroxide, which is available over the counter. When benzoyl peroxide touches the skin, oxygen is created. *P. acnes* cannot survive in the presence of oxygen.

Use caution when applying benzoyl peroxide because it is a potent bleaching agent that can damage fabrics. The pharmacist can answer any questions you might have.

Oral antibiotics
An oral antibiotic (taken by mouth) is sometimes used to treat more significant acne, especially in cases where the acne has spread to the back and chest. Such as topical treatments, oral antibiotics reduce inflammation.

Antibiotics can also stop *P. acnes* from multiplying. However, the use of antibiotics should be limited because bacteria can develop a resistance to them.

Combined treatment
A combined treatment can be an effective means of treating acne. In this case, a topical retinoid and an antimicrobial cream or gel can be used together. Sometimes they are combined into one product, while other times they are used separately. For example, a topical antimicrobial may be applied in the morning and a topical retinoid may be used at night.

Oral medications are also used in combination with a topical treatment. Most people taking a pill benefit from a topical cream or gel.
Your doctor or dermatologist will advise you on how and when to use a combined treatment for acne.

**Oral isotretinoin**
Isotretinoin (known as Accutane® in North America; Clarus and Epuris in Canada; and Roaccutane® in Europe) is a chemical compound related to vitamin A. In most cases, isotretinoin is used to treat severe nodular and scarring acne because

- it reduces sebum secretion
- it prevents the formation of comedones
- it acts as an anti-inflammatory
- it stops *P. acnes* from generating in hair follicles and sebaceous glands

However, this type of acne treatment must be closely monitored because isotretinoin has a number of side effects. More common side effects include dry skin, lips, nose and eyes. All side effects will begin to disappear when treatment stops.

However, there are more severe side effects. For example, isotretinoin can interfere with the development of a fetus. If you are pregnant or thinking about having a baby, talk to your doctor or dermatologist about the side effects of isotretinoin. There are also concerns about depression, inflammatory bowel disease and impact on liver.

**Hormonal therapy**
Treating acne with female hormones is an effective treatment option for some female patients. This means taking an oral contraceptive (the birth control pill). This type of treatment limits sebum secretion by reducing androgen levels. Other topical and oral treatments can be used along with oral hormonal therapy.

Treating acne using hormones is not for everybody. For more information, talk to your doctor or dermatologist.

**Scar prevention**
If left untreated, some acne can cause scarring. It is not always easy to predict which acne will cause scarring; it is a complex problem.

Handle acne with care. Manipulating, squeezing, and popping increases the likelihood of scarring. The best way to prevent scarring is to actively treat the acne. Treatment is not only for those who have severe acne; no matter how little or how much acne you might have, you can seek treatment for your skin.
Key points

- Acne vulgaris is the most common skin disease in teenagers.
- Acne occurs deep within the skin, and severity and outcomes vary from person to person.
- Acne causes comedones (whiteheads and blackheads), papules, pustules or even nodules.
- Picking, squeezing and popping can lead to scarring.
- Acne is manageable with the appropriate treatment. Ask your doctor or your dermatologist about your options.