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Acne

Acne (also called 'zits' or 'spots') is a common condition, particularly in teenagers. It can also occasionally affect middle-aged people and babies. It often causes a lot of worry and distress but can usually be cleared up, or at least improved a lot, with the right treatment. The treatment can take about a month to work and you may need to continue it for a while, even after the spots have cleared.

What is acne and who gets it?

Acne is a common skin condition that causes black, white or red spots, usually on the face. It can also affect the back and the top of the chest.

Most people with acne are aged between 12 and 25 years but some older people are affected. Boys are more commonly affected than girls. Acne usually affects the face but may also affect the back, neck and chest.

About 8 in 10 teenagers develop some degree of acne. Often it is mild. However, it is estimated that about 3 in 10 teenagers have acne bad enough to need treatment to prevent scarring. Untreated acne usually lasts about 4-5 years before settling by itself.

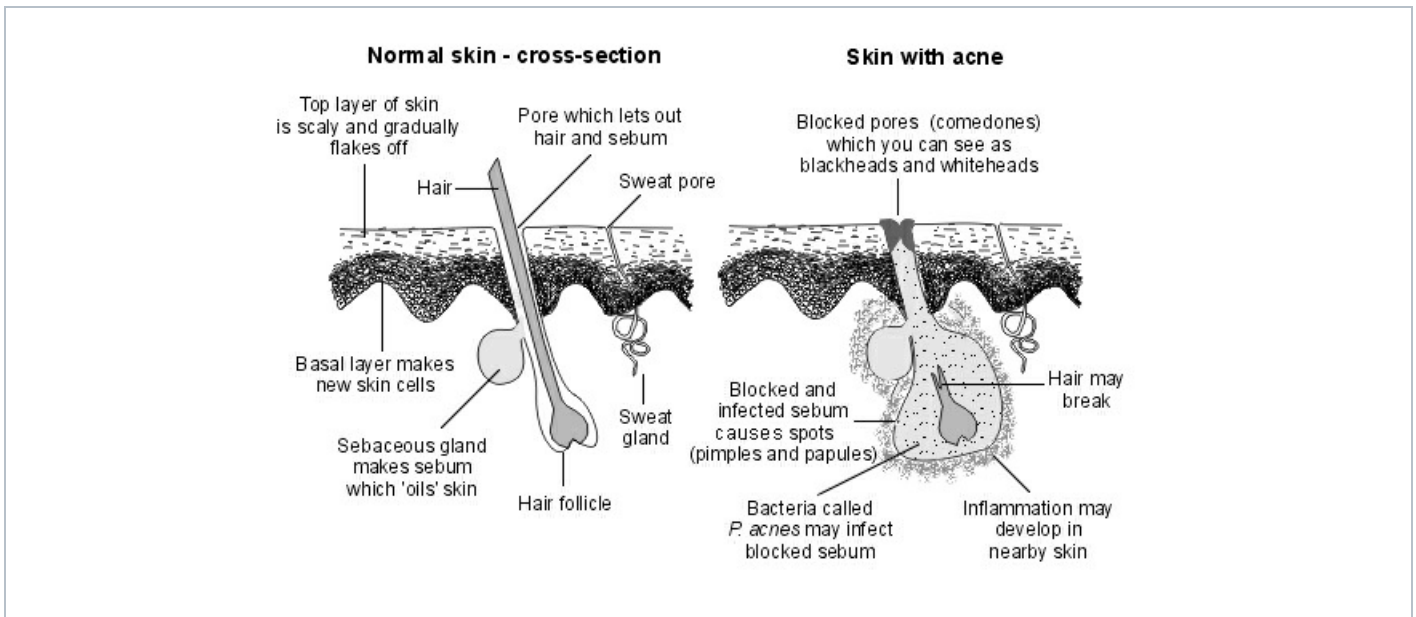
This shows typical, mild, acne on the forehead that almost all teenagers will get at some point. This usually fades with time, or responds well to a simple cream like benzoyl peroxide (see below for treatments).



By Roshu Bangal (Own work) via Wikimedia Commons

What causes acne?

This picture shows a tiny hair follicle and a tiny sweat pore (a 'pore' is just a tiny hole in the skin). The left half of the picture shows a normal hair follicle and pore: they are open, unblocked and working properly. At the bottom of the shaft of hair you can see a small circle called a 'sebaceous gland' which makes the usual oil that we all have on our skin. The right half of the picture shows what happens if the hair follicle becomes blocked: the oil can't come out on to the skin and so the bottom section of the hair bulges up, full of oil (or what is technically called 'sebum').



This bulge under the skin causes a spot (or 'zit'). Tiny bugs, or bacteria, can then grow inside the blocked hair follicle and make the spot go red and sore.

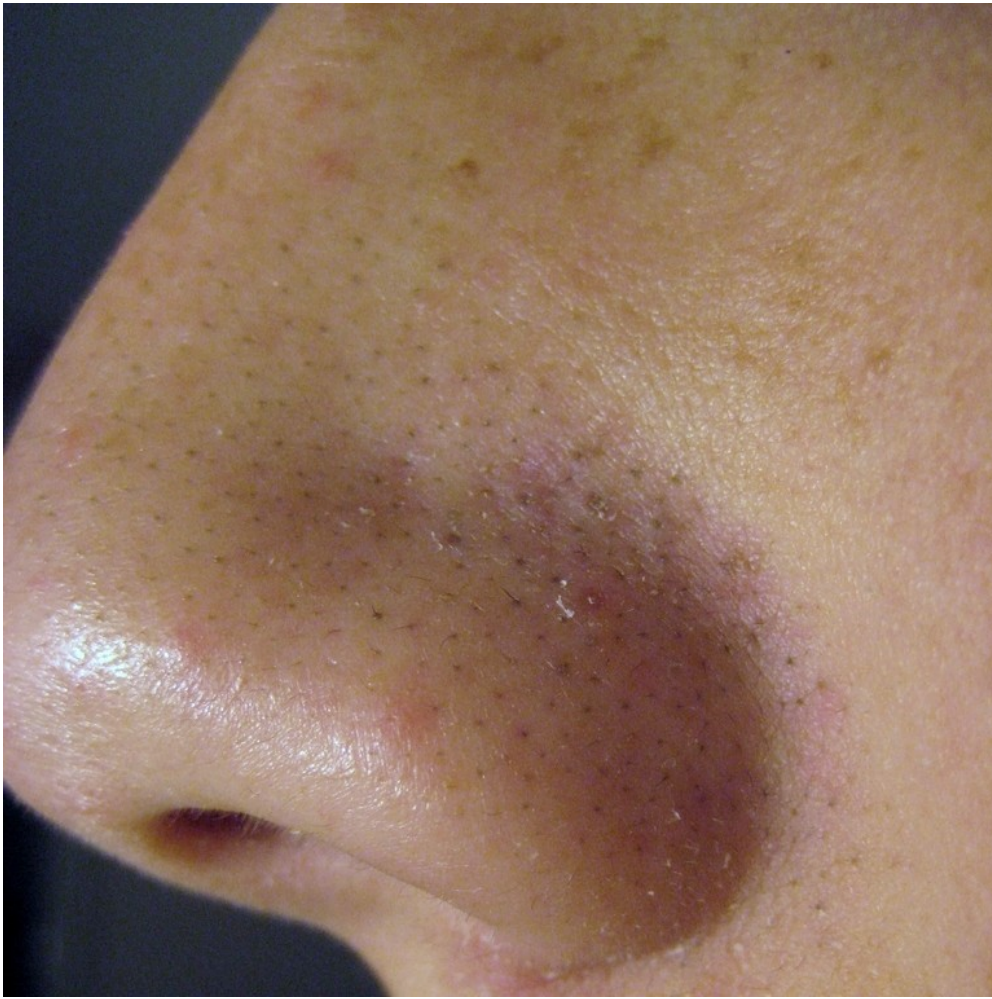
So the two things that cause acne are:

- a) A blocked pore or hair follicle; **and**
- b) Infection at the bottom of the blockage.

You can understand now that the treatments for acne aim to:

- a) Unblock the pores or hair follicles on your skin; **and**
- b) Kill any infection inside.

This photo shows blackheads on someone's nose. Blackheads are a blocked pore, with dead skin cells gathered up inside. Despite popular belief, the black bit is not actually dirt: it's just dead skin cells gathered up, made to look dark by the pigment in skin, called melanin.



By Elecbullet (Own work) via Wikimedia Commons

Can anything else cause acne?

The description above is the cause of almost all cases of acne. Rarely, certain diseases in girls and women may cause acne or make acne worse. For example, **polycystic ovary syndrome** and conditions that cause excess male hormone to be made in the ovary or adrenal gland. These conditions cause other symptoms in addition to acne, such as thinning of scalp hair, excess hair growth (hirsutism) of facial or body hair, and other problems. Being exposed to chemicals in the workplace, particularly things called halogenated hydrocarbons, can cause acne.

What makes acne worse?

- If you think about the blocking up of pores causing spots, you can appreciate that putting on a lot of make-up or foundation can make acne worse. A lot of girls and young women try to cover up their acne with make-up, which is totally understandable. However try to have some make-up free days to let your skin breathe. If you do need to use make-up, try to use one with a pH that is closest to the skin.
- Touching your skin or sitting with your hands over your cheeks or chin will spread germs from your fingers on to your face. Try not to touch your face at all, other than for putting on medication.
- Picking and squeezing the spots may cause further inflammation and scarring.
- **Sweating heavily** or humid conditions may make acne worse. For example, doing regular hot work in kitchens. The extra sweat possibly contributes to blocking pores.
- Spots may develop under tight clothes. For example, under headbands, tight bra straps and tight collars. This may be due to increased sweating and friction under tight clothing.
- Some medicines can make acne worse. For example, **phenytoin** (which some people take for epilepsy) and steroid creams and ointments that are used for eczema. Do not stop a prescribed medicine if you suspect it is making your acne worse but tell your doctor. An alternative may be an option.
- Some contraceptive pills make acne worse; others can make it better. (Generally the **progestogen-only contraceptives** can make acne worse: like the mini-pill or the contraceptive injection or depot in the arm).
- Anabolic steroids (which some bodybuilders take illegally) can make acne worse.

Some myths and wrongly held beliefs about acne

- Acne is not caused by poor hygiene. In fact, excessive washing may make it worse.
- Stress does not cause acne, although if you have acne then stress can make it worse.
- Acne is not just a simple skin infection. The cause is a complex interaction of changing hormones, sebum, overgrowth of normally harmless germs (bacteria) and inflammation. You cannot catch acne - it is not passed on through touching.
- Acne cannot be cured by drinking lots of water.
- There is no evidence to say that sunbathing or sunbeds will help to clear acne.
- Some people believe that acne cannot be helped by medical treatment. This is not true. Treatments usually work well **if used correctly**.
- It used to be thought that diets high in sugar and milk products made acne worse but research has failed to find evidence to support this.

Skin care for people with acne

- Do not wash more than normal. Twice a day is normal for most people. Lukewarm water alone is usually enough. Some doctors prescribe medicated facial washes, but be careful about using strong soap you may have bought over the counter. (Very hot or cold water may worsen acne.) Do not scrub hard when washing acne-affected skin. Do not use abrasive soaps, cleansing granules, astringents, or exfoliating agents. Excess washing and scrubbing may cause more inflammation and possibly make acne worse.
- Allow your skin to air dry, as towels can sometimes harbour germs (bacteria).
- Antiseptic washes may be beneficial.
- You cannot clean off blackheads. The black tip of a blackhead is actually skin pigment (melanin) and cannot be removed by cleaning or scrubbing.
- Some topical acne treatments (described below) may dry the skin. If this occurs, use a fragrance-free, water-based moisturising cream. Do not use ointments or oil-rich creams, as these may clog the holes of the skin (pores).

What are the treatment aims and options for acne?

The aim of treatment is to clear spots as much as possible and to prevent scarring. There are different types of treatment that work in different ways. A doctor will be able to tailor-make the treatment for your skin. Some things that work for others may not work well for you. Treatments can be those that you apply to the skin (topical) and/or tablets.

You may prefer not to treat mild acne which is not inflamed - that is, if you just have blackheads and/or whiteheads (comedones) and mild pimples. Mild acne is common and usually goes in time, without scarring. However, inflamed acne can scar. If you develop inflammation, such as redness, red spots or pustules, it is best to treat them early to prevent scarring. Treatment will usually clear most spots if you use it properly. However, be realistic: skin takes a few weeks to improve, so you may not notice any difference at first. Also, most acne treatments need to be taken for three months to have their full effect.

Topical preparations for acne

Various gels, lotions and creams are used to treat acne. As you can imagine, there are plenty of acne treatments to buy. Sometimes they work, sometimes they don't and it is quite easy to build up a large collection of creams that sit in your bathroom cabinet and have cost a lot of money, but don't seem to help your spots. It's often worth asking your doctor about your acne before buying things: getting the right treatment from the start can save a lot of time and money.

Benzoyl peroxide

Benzoyl peroxide is a common topical treatment. It has three actions - it kills germs (bacteria), reduces inflammation and helps to unplug blocked pores. Therefore, it often works well to clear inflamed spots and it helps to clear blackheads and whiteheads (comedones). You can buy benzoyl peroxide at pharmacies, without a prescription. There are lots of brand names for it and it comes in different strengths - there is a 2.5%, 4%, 5% and 10% strength. Benzoyl peroxide:

- Works best if you wash the skin 20-30 minutes before use.
- May bleach hair, bed linen, or clothes that come into contact with it.
- Commonly causes mild skin irritation. If your skin does become irritated then stop using it until the irritation goes. Then try again with a lower strength, or reduce the time it is left on your skin before washing off. To prevent skin irritation, the following may help:
 - Most people can tolerate the 5% preparation but if it irritates then try the 2.5% once the irritation settles. If you wish to increase the strength, do it gradually.
 - Use a water-based preparation (rather than an alcohol-based one).
 - Apply once daily at first and wash off after several hours.
 - Gradually increase the length of time left on the skin.
 - Aim to put it on twice daily when you get used to it.

This photo shows a young man who has used a gel with benzoyl peroxide in combination with adapalene (see below) for 12 weeks. Notice how the spots have become less angry and the skin is less red:



Image source: Open-i (Sittart JA et al) - see Further reading reference below

Retinoids

Retinoids are good at unplugging blocked pores. They include **adapalene**, **tretinoin** and **isotretinoin** which come in various brand names. They also have some effect on reducing inflammation. Therefore, one is often used early on in acne to help to unblock pores and to treat blackheads, whiteheads and mildly inflamed spots. You need a prescription for all retinoid preparations: you can't buy them in the shops. When you use a topical retinoid:

- You may develop some skin redness and skin peeling. This tends to settle over time.
- The spots sometimes become a little worse before improving.
- Your skin may be more sensitive to sunlight. Therefore, it is best to apply it at night.
- A sun protection cream may also help if you are out in the sun.
- The most common side-effects are burning, irritation and dryness. Therefore, you may be advised at first to use a low-strength, less frequent application and for a shorter duration.
- You should not be pregnant, or intend to become pregnant, when you use a topical retinoid as there is a slight risk of harm to unborn babies. Discuss contraception with your doctor if necessary.

Topical antibiotics

There are various topical antibiotic preparations. They are great at treating acne on the back or chest: places where it's not practical to put lots of cream. They reduce the number of bacteria and reduce inflammation. However, they have little effect on unplugging blocked pores. So, they are usually good at treating inflamed acne but blackheads and whiteheads may remain. You need a prescription to obtain a topical antibiotic. They may cause mild irritation but generally cause fewer side-effects than the other topical preparations. Topical antibiotics are usually prescribed in combination with other medicines (see below). Antibiotics often take quite a few weeks, if not months, to work fully. It's sometimes worth sticking with one for at least two months before changing.

Azelaic acid

Azelaic acid is an alternative to benzoyl peroxide that mainly works by unplugging blocked pores. So, like retinoids, it is good at clearing blackheads and whiteheads. It has some effect on reducing inflamed acne too but probably not as much as antibiotics or benzoyl peroxide. However, it may cause less skin irritation than benzoyl peroxide. You can buy azelaic acid in the shops.

Combinations

Some preparations contain a mixture of ingredients. For example, benzoyl peroxide plus an antibiotic is commonly used; benzoyl peroxide and adapalene; or a retinoid plus an antibiotic. These may work better than either ingredient alone.

Light therapy

There are some new treatments that use 'light' to treat acne. You can buy 'light therapy boxes' to use at home. Although there are a lot of online articles about how good they are, the scientific research doesn't prove them to be that good at the moment (apart from 'blue light' for mild acne). They may be a good treatment in the future though.

Tablets that can treat acne

Antibiotic tablets

Antibiotics work by killing germs (bacteria) that contribute to the cause of acne. They also have a direct effect of reducing inflammation. Antibiotics usually work well to clear inflamed acne spots and any surrounding skin inflammation.

However, they have little effect on unplugging blocked pores - which you can see as blackheads and whiteheads (comedones). So, if you only have mild acne with just blackheads and whiteheads, you are better off using a topical treatment that unblocks holes in the skin (pores).

If you have a lot of blackheads and whiteheads as well as inflamed acne spots, you may be advised to use a topical treatment, such as benzoyl peroxide, in addition to taking an antibiotic tablet. Using a topical treatment as well as an antibiotic can reduce the chance that the germs become resistant to the antibiotics.

Always read the leaflet that is in the packet of antibiotics. Things such as precautions and possible side-effects vary between antibiotics. The following are some general points.

Tetracycline-based antibiotics are the most commonly used antibiotics to treat acne. These include: **oxytetracycline**, **tetracycline**, **doxycycline** and **lymecycline**.

- Children aged under 12 years should not take tetracycline-based antibiotics because it damages their teeth.
- Do not take tetracycline-based antibiotics if you are pregnant, breastfeeding or intend to become pregnant. Discuss contraception with your doctor if necessary.
- Food and milk affect the absorption of oxytetracycline or tetracycline. Therefore, take these tablets on an empty stomach, between meals, with a glass of water (not milk). Doxycycline and lymecycline can be taken with food.

Other antibiotics that are sometimes used include **erythromycin** and **trimethoprim**. You may be advised to take one of these if one of the above has not worked well or is unsuitable.

This photo shows someone with acne on their back. It would be hard to put cream on every day here, so antibiotic tablets might be a good treatment:



By James Heilman, MD (Own work) via Wikimedia Commons

The pill (a hormone treatment)

The **combined contraceptive pill (the pill)** may help some women if their acne seems to be partly related to their hormonal changes - for example, acne that flares up around the time of a period. It is the oestrogen part of the pill that is thought to help. A variety of the pill called **co-cyprindiol** may be especially useful for acne and is the only contraceptive pill licensed for it, but has not been shown to be any more effective than other contraceptive pills.

Isotretinoin tablets

Isotretinoin greatly reduces the amount of oil (sebum) made by your sebaceous glands. It works very well and usually clears spots even in severe cases. However, it is used only on the advice of a specialist after other treatments have been tried first. This is because it can have side-effects like cracking of the lips and very dry skin. It used to be thought that isotretinoin tablets can cause depression in teenagers, but in fact this has never been proven. It is harmful to the unborn baby if you are pregnant and so if you are a woman taking isotretinoin you will have to be very careful not to get pregnant.

This photo shows the before and after image of acne after 12 weeks of isotretinoin use:

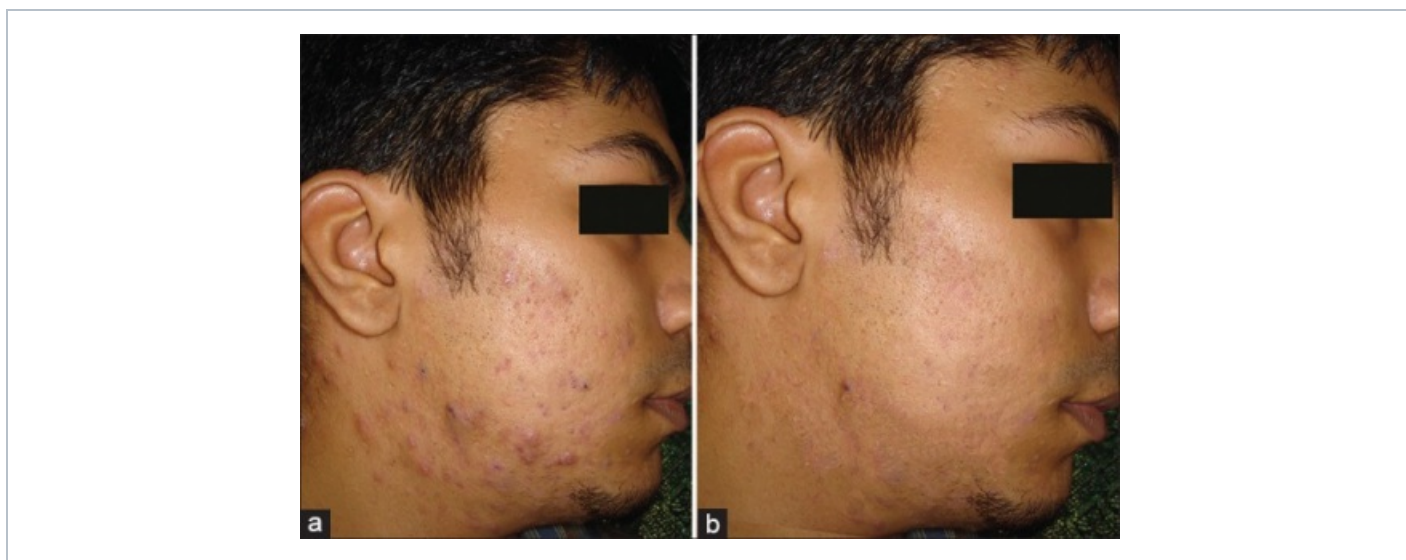


Image source: Open-i (Rao PK et al) - see Further reading reference below

How long is treatment needed?

Whatever treatment is used, it is normal to take up to four weeks for there to be any improvement that you can see. There is often a good response to treatment by six weeks. However, it can take up to four months (sometimes longer) for maximum response to a treatment and for the skin to be generally free of spots. **Note:** the most common reason for a treatment failure is because some people think that treatment is not working after a couple of weeks or so and give up.

Try to continue with any treatment for at least six weeks before deciding if it is working. If there is no improvement after six weeks of taking a treatment regularly and correctly, do not despair. Adding in another treatment or a change to a different or more powerful treatment will usually be advised and is likely to work. Although treatment can usually clear most spots, there is no treatment that will make your skin perfect and the odd spot may remain: be realistic.

Will acne return after treatment?

Once the spots have cleared, acne commonly flares up again if you stop treatment. So it is common to carry on with a maintenance treatment to prevent acne from flaring up again. It is common to need maintenance treatment for 4-5 years to keep acne away. This is typically until the late teens or early 20s.

Maintenance treatment is usually with either benzoyl peroxide or a topical retinoid. These can both be used indefinitely. The dose used to prevent spots from returning is often lower than that used to treat acne. For example, one application to the skin every other day with a low-strength preparation is all you may need to keep spots from returning.

Antibiotics, either in tablet form or in a gel or cream, should not be used for too long. This is because long-term use of antibiotics can lead to resistance of germs to the antibiotics. Azelaic acid, another topical treatment, is only licensed for treatment periods of six months. So if at first you are treated with an antibiotic or azelaic acid, you may be advised to switch to benzoyl peroxide or a topical retinoid for maintenance treatment once the spots have died down.

Does acne ever need hospital treatment?

If you have severe acne which doesn't respond to the treatments prescribed by your family doctor, you may need to see a hospital specialist. This is particularly if your doctor believes you would be helped by isotretinoin tablets, which aren't usually prescribed by family doctors. You may need hospital treatment for acne scars. Options available for scarring include laser resurfacing of the skin, mechanical or chemical peeling of the skin, breaking the scar tissue down with a sterile needle (subcision) and injection of collagen filler. There are plenty of private clinics around that provide these new treatments, but be warned: they are expensive. Try to get the opinion of an impartial doctor in a state-funded system like the NHS before having anything done in a private clinic.

Further reading & references

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