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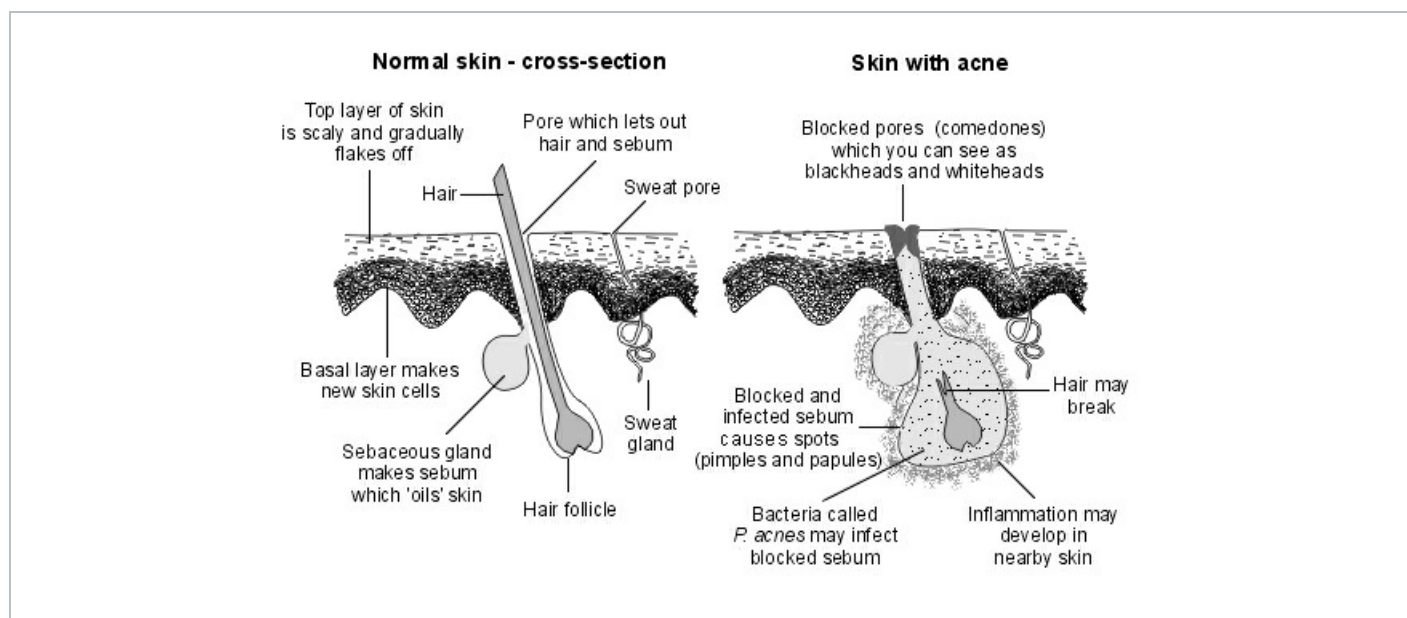
## Acne

Acne is common and is usually treatable. You may need treatment for several months to clear spots. Inflamed acne needs to be treated early to prevent scarring. Once the spots are gone, you may need maintenance treatment for several years to keep the spots away.

### What is acne and who gets it?

Acne is the common cause of spots. Most people with acne are aged between 12 and 25 but some older and younger people are affected. Boys are more commonly affected than girls. Acne usually affects the face but may also affect the back, neck and chest. The severity can range from mild to severe. 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. However, it can last for many years in some cases.

### What causes acne?



### Understanding normal skin

Small sebaceous glands lie just under the skin surface. These glands make the oil (sebum) that keeps the skin supple and smooth. Tiny holes (pores) on the skin allow the sebum to come on to the skin surface. Hairs also grow through these pores. During the teenage years, you make much more sebum than when you were a child. This is due to the hormonal changes of puberty which stimulate the sebaceous glands. As a rule, the more sebum that you make, the more greasy your skin feels and the worse acne is likely to be. Some people make more sebum than others.

### Mild-to-moderate acne - blackheads, whiteheads and small pimples

Some pores become blocked (plugged). This is due to the skin at the top of the pores becoming thicker, combined with dead skin cells that are shed into the pores. You can see the plugs that block the top of the pores as tiny spots known as blackheads and whiteheads (comedones). **Note:** the black of the blackheads is due to skin pigment and is not dirt as some people think. In many cases, acne does not progress beyond this mild stage.

Some sebum may collect under blocked pores. You can see this as small spots called pimples or papules. In some cases, acne does not progress beyond this mild-to-moderate stage when you can see a number of small pimples, blackheads and whiteheads.

### Moderate-to-severe acne - larger spots and inflammation

Trapped sebum is ideal for a germ (bacterium) called *Propionibacterium acnes* to live and multiply. Small numbers of this bacterium normally live on the skin and do no harm. However, if a large number develop in the trapped sebum, the immune system may react and cause inflammation. If inflammation develops, it causes the surrounding skin to become red and the spots become larger and filled with pus (pustules). In some cases the pustules become even larger and form into small nodules and cysts.

Each inflamed spot will heal eventually. In some cases, the area of skin that was inflamed remains discoloured for several months after the inflammation has gone (post-inflammatory hyperpigmentation). This is often more noticeable in darker-skinned people. Also, a small pitted scar is commonly left on the skin where there was an inflamed spot. These small scars often do not fade fully and are a marker in older people that they once had inflamed acne spots.

### Rare causes of 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 growth of facial or body hair (hirsutism) and other problems. Another rare cause of acne is exposure to chemicals that occur in some workplaces (halogenated hydrocarbons).

## What makes acne worse?

- **The progestogen-only contraceptive pill may make acne worse.**
- In women, the hormonal changes around the monthly period may cause a flare-up of spots.
- Thick or greasy make-up may, possibly, make acne worse. However, most make-up does not affect acne. You can use make-up to cover some mild spots. Non-comedogenic or oil-free products are most helpful for acne-prone skin types.
- 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, tight collars, etc. 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.
- Anabolic steroids (which some bodybuilders take illegally) can make acne worse.
- 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.

## 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.
- Acne is not just a simple skin infection. The cause is a complex interaction of changing hormones, sebum, overgrowth of normally harmless germs (bacteria), inflammation, etc (described above). You cannot catch acne - it is not passed on through touching (contagious).
- 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**.

## Skin care for people with acne

- Do not wash more than normal. Twice a day is normal for most people. Use a mild soap and lukewarm water. (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. Use a soft washcloth and fingers instead. Excess washing and scrubbing may cause more inflammation and possibly make acne worse.
- 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 or pharmacist will advise and the treatment they advise will often depend on the severity and type of your acne. 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, pustules, etc, it is best to treat early to prevent scarring. Treatment will usually clear most spots if you use it properly. However, no treatment will clear your skin perfectly.

## Topical preparations for acne

Various gels, lotions and creams are used to treat acne. Different preparations work in different ways. The following briefly describes the different types. However, always read the leaflet in the packet, because such things as how to apply it and precautions vary between different preparations. One general point is that you should apply topical treatments to all the affected area of skin and not just to each spot.

### **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. It comes in different brand names and 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 on twice daily when you get used to it.

## 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. 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 at night and wash off in the morning. 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, 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 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). Using them alone can increase the risk that the germ will become used to the antibiotic and make the treatment less effective.

## Azelaic acid

**Azelaic acid** is an alternative 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.

## Combinations

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

## 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.

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.
- Do not take tetracycline-based antibiotics if you are pregnant, breast-feeding 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.

### 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 began or became worse in adulthood, or if acne seems to flare 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 where a sensitivity to androgen hormone is thought to be making acne worse. For example, for women with excess facial hair growth in addition to acne. Co-cyprindiol contains a combination of an oestrogen plus cyproterone (an anti-androgen).

### 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 normally used only on the advice of a specialist after other treatments have been tried first. This is because there is a risk of serious side-effects with **isotretinoin tablets**.

## 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.

Therefore, continue with any treatment for at least six weeks before deciding if it is working or not. 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.

## Will acne return after treatment?

Once the spots have cleared, acne commonly flares up again if you stop treatment. Therefore, after the spots have gone or are much reduced, 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. In a small number of cases, acne persists into the 30s, or even later. For these people it is possible to continue to treat the skin to keep it under control.

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 may be sufficient to keep spots from returning.

It is not usual to use topical antibiotics or antibiotic tablets as maintenance treatment once the spots have cleared. This is because long-term use of antibiotics can lead to resistance of germs to the antibiotics. Also, azelaic acid, another topical treatment, is only licensed for treatment periods of six months. Also, it is best not to take the pill long-term solely to prevent acne. Therefore, if at first you are treated with an antibiotic, azelaic acid or the pill, you may be advised to switch to benzoyl peroxide or a topical retinoid for maintenance treatment.

## Does acne ever need hospital treatment?

If you have severe acne which does not respond to the treatments usually prescribed by GPs, you may need to see a hospital specialist. In particular, if your doctor believes you would be helped by isotretinoin tablets. You may also 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.

## Further reading & references

- [Acne vulgaris](#); NICE CKS, September 2014 (UK access only)
- [Guideline on the Treatment of Acne](#); European Dermatology Forum (September 2011)
- [Advice on the safe introduction and continued use of isotretinoin in acne in the UK 2010](#); British Association of Dermatologists
- [Kim RH, Armstrong AW](#); Current state of acne treatment: highlighting lasers, photodynamic therapy, and *Dermatol Online J.* 2011 Mar 15;17(3):2.

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