

Patient information from the BMJ Group

Bad breath

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Bad breath

Lots of people get bad breath at some point. You can get bad breath for a short time if you eat strong-smelling foods, like onions. Or you can get it because of a medical condition, such as gum disease or an infection in your throat. Bad breath can be embarrassing, but there are treatments that can help.

We've brought together the best research about bad breath and weighed up the evidence about how to treat it. You can use our information to talk to your dentist or doctor and decide which treatments are best for you.

What is bad breath?

Bad breath is an unpleasant smell on your breath. Other people may notice it when you speak or breathe out. You might not be aware of it yourself.

Everyone gets bad breath occasionally, but some medical problems can mean you have it most of the time or even all of the time. Bad breath is sometimes called halitosis.

Temporary bad breath

Lots of people have bad breath first thing in the morning. That's because saliva usually keeps your mouth clean, and it dries up while you sleep.^[1]

'Morning breath' is probably worse in people who tend to breathe through their mouths rather than their noses.^[2] But the problem is easily put right. It will go away as soon as you have something to eat, brush your teeth, or rinse your mouth.

You can also have temporary bad breath after:^[2]

- Eating spicy or strong-smelling foods, like garlic, raw onions, or curry
- Smoking
- Drinking alcohol.

Most people put up with bad breath for a little while if they enjoy these things. But steering clear of alcohol, cigarettes, or spicy food can help you avoid bad breath.

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Long-lasting bad breath

Bad breath that lasts through the day is usually caused by a problem in your mouth.^[3] For 9 in 10 people, bad breath is caused by either gum disease or bacteria that grow on your tongue.^{[1] [3]}

However, bad breath is occasionally caused by a medical problem somewhere else in your body. Conditions that can cause bad breath include sinusitis, tonsillitis, and some lung problems or stomach problems.

Bad breath caused by bacteria

Bacteria can grow on the coating on the back part of your tongue. As they grow, bacteria give off gases. These gases can make your breath smell bad.

You may be more likely to have this kind of bad breath if you:^[4]

- Smoke
- Don't brush your teeth every day
- Don't produce enough saliva.

Not producing enough saliva can be a problem because saliva helps to keep your mouth clean. You might produce less saliva than usual if you:

- Are taking some medicines, such as antihistamines, antidepressants, or tablets for high blood pressure
- Have problems with the glands in your mouth that make saliva
- Don't drink enough water
- Don't eat regularly enough
- Breathe through your mouth too much.

Bad breath caused by gum disease

The most common problem that causes bad breath is gum disease. You get gum disease because of plaque. Plaque is a coating on your teeth. It's mainly made up of bacteria. These bacteria can sometimes infect your gums and make them inflamed.

There are two main stages of gum disease.^[5]

- **Gingivitis.** This is when your gums become red and swollen. They may bleed easily when you brush your teeth. You can get rid of gingivitis by brushing your teeth at

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least twice a day. Flossing can also help by getting rid of plaque from between your teeth. Or you can get your teeth thoroughly cleaned by a dentist or dental hygienist.

- **Periodontitis.** This is a later stage of gum disease. Your gums start to pull away from your teeth and form pockets that are infected. If you don't get treatment, the bones, the gums, and the other tissues that support the teeth can be destroyed. If this happens, teeth may eventually become loose and have to be removed.

Other problems in your mouth that can cause bad breath are:^[2]

- An **infection** in the tooth socket after a tooth has been taken out
- Mouth ulcers
- Bits of food that collect under something in your mouth, such as braces or a bridge.

Bad breath caused by another medical condition

Bad breath can be caused by a condition that affects your throat, lungs, or somewhere else in your body. Conditions that can cause bad breath include the following.^{[1] [2] [6]}

- **Sinusitis** (an infection of the air spaces behind your nose).
- **Bronchitis** (an infection in your airways).
- **Tonsillitis** (a type of throat infection).
- Catarrh that lasts a long time.
- An object that's trapped in your nose. Children sometimes put small objects in their noses.
- Problems with your digestive system (for example, **heartburn** can make stomach acid and gas travel back up into your throat).
- Liver or kidney problems.
- **Diabetes** . If you have diabetes, your body may burn fat for energy instead of glucose. This is called **diabetic ketoacidosis**. It can make your breath smell fruity or sweet. Diabetic ketoacidosis is very serious. Anyone who has it should see a doctor straight away
- A condition called **trimethylaminuria**. This happens when a chemical called trimethylamine can't be broken down by your body. Instead, you get rid of it in sweat and saliva. This causes bad breath and body odour.

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Thinking you have bad breath when you don't

Some people worry that they have bad breath when they actually don't. This is called **pseudo-halitosis**. People with pseudo-halitosis tend to look for signs in other people's behaviour to prove to themselves that their breath is bad. ^[2]

Some people with pseudo-halitosis continue to worry that they have bad breath even after they've been examined and reassured. This is sometimes called **halitophobia**. A **phobia** is when you're very afraid of something.

Thinking you have bad breath can be very upsetting. ^[7] It's even been known for people with halitophobia to commit suicide.

Seeing a doctor or dentist

A doctor or dentist can help you with bad breath. If your problem is caused by bacteria or a problem in your mouth, your dentist will be able to suggest treatment. Your dentist will also be able to offer advice if you think you have bad breath but it turns out you don't. ^[8]

If your bad breath is caused by a medical condition somewhere else in your body, you'll need to see a doctor. If you have halitophobia, and you feel bad about your breath even though nothing is wrong, your doctor may arrange for you to see a therapist or counsellor who can help you.

What are the symptoms of bad breath?

It's possible to have bad breath without knowing. That's because you get used to the smell of your own body. Most people are too polite or embarrassed to comment on bad breath, so you may need to rely on a family member or close friend to tell you if you have it.

Not all bad breath smells the same. How your breath smells may depend on the cause of the smell. For example: ^[6]

- A fruity smell can be a sign of a dangerous condition called **ketoacidosis**. This can happen if you have **diabetes**. It means that your body can't use glucose for energy and has to burn fat instead. You should see a doctor straight away if you notice this
- A smell like ammonia (a fishy smell) can happen if you have **kidney failure**
- A smell like faeces (stools) can happen if you've been vomiting for a long time.

As you can't smell your own breath, the best way to find out if you have bad breath is to ask a close friend or a relative. Or you can go to see your dentist or dental hygienist.

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If you're by yourself, you can get a rough idea of whether your breath smells bad by licking your wrist. Wait a few seconds for it to dry and then smell your wrist. That tells you how the end of your tongue smells.

You can check how the back of your tongue smells by scraping the very back part of your tongue with a spoon, then smelling the stuff on the spoon. That is probably the way your breath smells to others. But be careful about putting a spoon in the back of your mouth. It could make you gag or be sick.

If you go to see your dentist, they can check your breath using one of these tests. ^[9]

The sniff test

This is the easiest test. Someone just smells your breath. This test is sometimes done by breathing out slowly through a long tube. Your breath is sniffed as it comes out of the other end of the tube by an examiner, who may be sitting behind a screen.

A dentist can also measure how your tongue smells by scraping the surface of your tongue with a plastic spoon. They can measure any smell from plaque in your mouth by passing floss between your back teeth. ^[10]

To make the results of the test as accurate as possible, you will need to avoid:

- Taking antibiotics. These affect the bacteria in your mouth. But don't stop taking antibiotics just to do this test
- Eating strong-smelling foods, such as garlic or onions, for 48 hours before the test
- Using scented cosmetics, perfume, or aftershave for 24 hours beforehand
- Eating, smoking, or drinking anything but water for 12 hours beforehand
- Brushing, flossing, or rinsing your teeth for 12 hours beforehand.

To be sure you really have bad breath, the test should be done on two or three different days if possible.

The person examining your breath can get a better idea of what might be causing your bad breath by comparing the odour coming from your mouth and nose. ^[11]

- A bad smell coming from your mouth but not your nose is likely to mean a problem in your mouth or throat.
- A bad smell coming from your nose but not your mouth may mean a problem in your nasal passages or sinuses.
- A bad smell coming equally from your nose and mouth may be a sign of a more serious illness, such as liver or kidney problems.

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An electric monitor

An electric device can test the air from your mouth for chemicals. One of these devices is called a Halimeter. It looks a bit like a car radio with a tube coming out of the front.

As well as testing your breath, your dentist should do a thorough check of your mouth, including your teeth, gums, and tongue. ^[10]

How common is bad breath?

We can't say exactly how many people have bad breath. Lots of people with bad breath don't know, or don't bother seeing a doctor or dentist.

Although we can't say for certain how many people have bad breath, it does seem very common. ^[12] Some research suggests that about half of us get it at some point. ^[13] ^[14] ^[15] ^[16]

Most people with bad breath get it because of gum disease or bacteria on their tongue. About 9 in 10 people who have bad breath have this type of bad breath.

About 1 in 10 people who get bad breath do so because of an infection, like tonsillitis or sinusitis. ^[15]

One study found that about 5 in 100 people who thought they had bad breath actually had **pseudo-halitosis**. ^[17] That's when you think you have bad breath, but in reality you don't.

Men and women are equally likely to have bad breath. But women seek treatment more often than men. ^[12]

You're more likely to get bad breath as you get older. That's probably because older people are more likely to have gum disease. ^[18]

What treatments work for bad breath?

No one treatment for bad breath has been shown to work for certain. You may need to try several different things, or a combination of treatments.

- There are things you can do yourself to try to get rid of bad breath. For example, you can clean your mouth more thoroughly. To read more, see [Oral hygiene](#) .
- If you have gum disease, treating it may help your bad breath. To read more, see [Treatments for gum disease](#) .
- Mouthwashes that kill bacteria seem to reduce bad breath if you use them regularly.
- If your mouth is dry, your dentist may suggest artificial saliva. But there's no research to tell us how well this works.

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- Some brands of toothpaste contain a mineral called zinc. They claim to help prevent bad breath. But we didn't find any research to say whether they work.
- Chewing sugar-free gum will probably make your breath smell fresher after eating strong-smelling food. But we don't know if it works for other types of bad breath.

All the research we found looks at treatments for bad breath caused by bacteria. It doesn't look at bad breath caused by gum disease or by an illness somewhere else in your body. However, the mouthwashes that are used for bad breath can also be used to treat gum disease.

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Treatment Group 1

Treatments for bad breath

Treatments that are likely to work

- [Medicated mouthwashes](#)

Treatments that need further study

- [Cleaning your tongue](#)
- [Sugar-free chewing gum](#)
- [Toothpastes that contain zinc](#)
- [Artificial saliva](#)
- [Watching what you eat and drink](#)

What will happen to me?

The treatment you'll need for bad breath depends on what's causing it. Some kinds of bad breath go away on their own, or when you brush your teeth. But for other kinds of bad breath, you'll need to see your dentist or doctor.

For example, you can get bad breath if you eat strong-smelling foods, such as onions. This is temporary, and nothing to worry about. It will go away in a little while, and more quickly if you clean your teeth, rinse your mouth, or chew sugar-free gum.

But you can also get bad breath because of **bacteria** in your mouth, gum disease, or a medical condition. These things may need treatment.

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The first thing many people do is try something themselves to get rid of bad breath. We didn't find any research to say whether these things help, but you may want to try the following.^[19] ^[20]

- [Stopping smoking](#) .
- Avoiding spicy or strong-smelling food.
- Chewing sugar-free gum regularly.
- Eating regularly. But remember that snacking, especially on sugary foods, isn't very good for your teeth.
- Eating breakfast every day. It's a good idea to include some fresh fruit. Pineapple contains an **enzyme** that helps clean your mouth.
- Using mouthwash, tablets, or a spray designed to fight bad breath.
- Chewing fresh parsley, mint, cloves, or fennel seeds.

If your breath doesn't get any better after trying these things, you may decide to visit your dentist. Most of the time, your dentist will be able to give you all the help you need.

If you have bad breath caused by bacteria on your tongue, your dentist will probably advise you to clean your teeth more thoroughly and use a mouthwash.^[21] To read more, see [Oral hygiene](#) .

Some people get bad breath because they don't make enough saliva. If a dry mouth is causing your bad breath, your dentist may prescribe artificial saliva.^[4] This comes as a lozenge you suck, a spray, or a gel. Or your dentist may suggest you suck sugarless sweets and drink more fluids.

If you have really bad breath that doesn't improve with self-treatment, your dentist may prescribe an antibiotic called metronidazole. Some brand names are Flagyl and Metrolyl.^[19] Antibiotics are drugs that kill bacteria.

If you have bad breath caused by gum disease, you'll need to improve your oral hygiene. But your dentist will also need to treat the underlying problem. To read more, see [Treatments for gum disease](#) .

If your bad breath turns out to be caused by an **infection** or another medical condition, you'll need to see your doctor.^[22]

If your dentist can't find any sign of bad breath, they will reassure you that your breath is perfectly acceptable.^[23]

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If you're still really worried about having bad breath, even after you've been reassured by your dentist, you may have a condition called **halitophobia**. This is a strong fear of having bad breath, even though your breath actually smells fine. As with any kind of phobia, a psychologist or psychiatrist will be able to help you. ^[21]

Treatments:

Medicated mouthwashes

In this section

Your breath is likely to improve if you use certain types of medicated mouthwash twice a day. These mouthwashes can reduce the levels of bacteria on the tongue, or neutralise the smells caused by sulfur-containing chemicals that are produced by bacteria. ^[26] ^[27] ^[28]

The studies we looked at found that people's breath improved after using a mouthwash for two weeks to four weeks. Just using a mouthwash once can make your breath fresher, but the benefits will only last for a few hours. ^[28] ^[29] ^[30] You can buy lots of different brands of mouthwash from a pharmacy. Many brands have different active ingredients. The active ingredients are the chemicals that kill bacteria or neutralise the smells.

Mouthwashes that kill bacteria (called anti-bacterial mouthwashes) contain chemicals like cetylpyridinium chloride and chlorhexidine gluconate. There's good evidence to show they work.

But there's no reason why any anti-bacterial chemical shouldn't work. For example, dentists sometimes recommend mouthwashes containing hydrogen peroxide. ^[31]

Some commonly available brands of mouthwash (with their active ingredients) are:

- Corsodyl (chlorhexidine gluconate)
- Dentyl pH (cetylpyridinium chloride)
- Oral-B Anti-Plaque (cetylpyridinium chloride)
- Peroxyl (hydrogen peroxide).

Mouthwashes that neutralise bad smells from sulfur-containing chemicals usually contain chlorine dioxide or zinc. Several small studies show they can work to improve people's breath. ^[26]

Mouthwashes don't have many side effects. One study found that a mouthwash containing chlorhexidine, cetylpyridinium chloride, and zinc lactate could make people's tongues

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discoloured.^[27] And some mouthwashes can make food taste strange for a while after you use them.^[31]

One study found that some people who used a mouthwash got a sore mouth.^[28] But the researchers didn't think it was the mouthwash that caused it. If you do get a sore mouth while you're using a mouthwash, you could try diluting it half and half with water.^[31]

Cleaning your tongue

In this section

You can buy cleaners to try and remove **bacteria** from your tongue. Some of them are plastic, and you use them to scrape your tongue. Some have bristles, a bit like a toothbrush. You can even use a soft, child's toothbrush to clean your tongue. You shouldn't scrape too hard, or you could damage the surface of your tongue.

Bacteria on your tongue can play a part in giving you bad breath. But there's no research to say whether cleaning your tongue helps.

Sugar-free chewing gum

In this section

Your breath may smell after you've eaten strong-smelling food. Lots of restaurants offer mints to freshen your breath as you're leaving. These may get rid of the smell of the food you just ate, but the sugar is not very good for your teeth. Chewing sugar-free gum may be better.

However, we don't know if sugar-free gum makes any difference if you have bad breath for any other reason. There isn't any research to tell us.

Toothpastes that contain zinc

In this section

Some toothpastes are advertised as helping to get rid of bad breath. They may contain a mineral called zinc. Zinc has many roles in your body, including keeping your **immune system** healthy. The immune system is your body's defence system against infection. Zinc may also work by neutralising sulfur-containing chemicals that can make your breath smell bad.

We can't say for sure whether toothpastes that contain zinc help with bad breath. There hasn't been much research to find out.

We did find one study carried out by researchers from a toothpaste manufacturer.^[32] The study found that bad breath improved more for people who used a zinc toothpaste,

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compared with people who used a normal toothpaste. After using the toothpaste for four weeks, the benefits seemed to last up to 12 hours after brushing.

Artificial saliva

In this section

Some people get bad breath because they don't make enough saliva. If having a dry mouth is causing your bad breath, your dentist may prescribe artificial saliva.^[33] This comes as a lozenge you suck, a spray, or a gel. But we didn't find any research about whether artificial saliva can help with bad breath.

There are other things you can do to encourage your mouth to make more saliva. Your dentist may suggest you suck sugarless sweets and drink more fluids.

Not making enough saliva can happen as a side effect of some medicines. If you talk to your doctor, they might be able to change your dose or type of drug. This can sometimes reduce the problem.

Watching what you eat and drink

In this section

You may have come across advice about how you can avoid bad breath by watching what you eat and drink. Some people say that eating certain herbs, drinking lots of water, avoiding coffee, or eating fresh fibrous vegetables, such as carrots, can help to keep your breath smelling fresh.

However, we don't know if any of these things help to prevent or get rid of bad breath. There hasn't been enough good research to tell us.

Further informations:

Oral hygiene

There are several things you can do to keep your mouth clean. These can reduce the number of **bacteria** in your mouth, which may make your breath fresher. We didn't find any good research on these things, but your dentist may suggest:^{[5] [24] [25]}

- Brushing your teeth twice a day with a fluoride toothpaste
- Cleaning between your teeth once a day, using floss or an interdental cleaner
- Using an anti-bacterial mouthwash
- Cleaning your tongue with a tongue brush or soft toothbrush

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- If you wear dentures, removing them at night, and making sure you clean them thoroughly before putting them back in next morning
- Having regular check-ups with a dentist.

Treatments for gum disease

Gum disease may play a part in causing bad breath. However, we haven't looked at the research on whether treating gum disease helps improve people's breath. So we can't be sure it works. But gum disease can damage your teeth, so your dentist will probably recommend treatment anyway.

If you have gum disease, your dentist may do some of the things below to treat it. ^[5]

- **Scaling.** The dentist or hygienist scrapes off the plaque, tartar (hardened plaque), and other deposits that are causing the infection from your teeth. It takes 15 to 30 minutes.
- **Scaling below the gum and root planing.** These are more complicated treatments that involve removing deposits from the parts of your teeth that are covered by the gums. You'll have an injection of local anaesthetic in your gum to numb the area. The treatment lasts about an hour.
- **Flap surgery.** You may need this if scaling, root planing, and medication don't get rid of the infection. A periodontist (a dentist who specialises in gum disease) folds your gums back from your teeth, removes the deposits, then stitches the gums back in place. It's done under local anaesthetic. The stitches either dissolve on their own or have to be removed seven to ten days later.

There are also other kinds of surgery that can be used for gum disease. These include:

- Replacing lost gum tissue or bone. This is called **grafting**
- **Guided tissue regeneration.** This is a treatment that stimulates the growth of new gum and bone
- **Bone surgery** to reshape the bone around the tooth. This makes it harder for bacteria to collect and grow there.

Some medicines can be used to treat gum disease. They're normally used after scaling and root planing. You may have:

- A mouthwash containing a chemical called chlorhexidine. It helps to kill bacteria and reduce the build-up of plaque

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- A small piece of antiseptic placed in the pockets where your gums have pulled away from your teeth
- An antibiotic gel or tiny balls of an antibiotic placed in the pockets between your gums and your teeth
- A low dose of an antibiotic called doxycycline.

Glossary:

sinusitis

If you have sinusitis, you have irritation in the spaces formed by the bones around your nose (your sinuses). Sinusitis can cause a feeling of tightness or pain. You may also have a fever. You can get these symptoms when you have a cold or an allergic reaction or when you fly in a plane.

tonsillitis

Tonsillitis is when your tonsils become inflamed. It happens when your tonsils get infected with viruses or bacteria. Tonsillitis causes a number of symptoms, including a sore throat, pain when you swallow and a high temperature.

bacteria

Bacteria are tiny organisms. There are lots of different types. Some are harmful and can cause disease. But some bacteria live in your body without causing any harm.

antidepressant

Antidepressants are medicines used to treat depression and sometimes other conditions. They work by changing the levels of chemicals in your brain called neurotransmitters. There are three main types of antidepressants, which work in different ways: selective serotonin reuptake inhibitors (SSRIs), monoamine oxidase inhibitors (MAOIs) and tricyclic antidepressants (TCAs).

high blood pressure

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

gland

A gland is any group of cells in the body that makes and releases something for use by another part of the body. For example, the thyroid gland makes a hormone called thyroxine. This acts on receptors within cells. By acting on the receptors it gives the cells a message to speed up their metabolism and work harder.

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

infection

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

bronchitis

Bronchitis is inflammation of one or both of the major airways (called bronchi) that lead in and out of your lungs.

heartburn

Heartburn is a painful, burning sensation in the chest. It happens, often after meals, when the contents of the stomach pass back up into the oesophagus. The oesophagus is the tube that runs from the mouth to the stomach.

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

phobia

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If you have a phobia of something, you are much more afraid of it than would be expected. You could have a phobia about things (such as dogs) or activities (such as going out in public). Phobias can make you feel panicky. They can also make your heart race or give you an upset stomach.

kidney failure

Kidney failure is when your kidneys can't make urine properly. Kidney failure happens because of kidney disease. People with kidney failure need to have dialysis, which is a way to get rid of the substances in your blood that normally go in your urine.

antibiotics

These medicines are used to help your immune system fight infection. There are a number of different types of antibiotics that work in different ways to get rid of bacteria, parasites, and other infectious agents. Antibiotics do not work against viruses.

liver

Your liver is on the right side of your body, just below your ribcage. Your liver does several things in your body, including processing and storing nutrients from food, and breaking down chemicals, such as alcohol.

kidney

Your kidneys are organs that filter your blood to make urine. You have two kidneys, on either side of your body. They are underneath your ribcage, near your back.

enzymes

Enzymes are chemicals in your body. They have lots of different functions, including playing a part in helping to digest food and starting other chemical reactions that keep the body working.

psychologist

A psychologist is trained to study the human mind and human behaviour. A clinical psychologist provides mental health care in hospitals, clinics, schools or to private patients.

psychiatrist

A psychiatrist is a doctor who specialises in psychiatry. Psychiatry is the branch of medicine that covers mental, emotional or behavioural problems.

local anaesthetic

A local anaesthetic is a painkiller that's used to numb one part of your body. You usually get local anaesthetics as injections.

antiseptic

An antiseptic is a substance used to kill harmful germs on your skin.

immune system

Your immune system is made up of the parts of your body that fight infection. When bacteria or viruses get into your body, it's your immune system that kills them. Antibodies and white blood cells are part of your immune system. They travel in your blood and attack bacteria, viruses and other things that could damage your body.

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Bad breath

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