

Gout

This booklet provides information and answers to your questions about this condition.

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What is gout?



Gout is often said to be the most painful form of arthritis. In this booklet we'll explain what causes it, how it can be treated and what you can do to reduce the risk of further attacks. We'll also suggest where you can find out more about living with gout.

At the back of this booklet you'll find a brief glossary of medical words – we've underlined these when they're first used.

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Gout can be very painful. Fortunately, there are a number of treatments available that can ease the pain and others that can reduce the risk of further attacks or even get rid of the problem altogether. With suitable treatment, gout is unlikely to result in permanent joint damage.

At a glance

Gout

What are the symptoms of gout?

Gout can have some painful symptoms, including:

- intense pain that comes on quickly in the affected joint (often the big toe)
- affected joints feeling hot and very tender to the touch
- affected joints looking swollen
- skin that looks shiny and often red.

What causes it?

Gout is caused by too much uric acid, or urate, in your body. It's produced by the breakdown of food. Sometimes your body isn't able to flush out the extra urate through the urine, and when it builds up above a certain level it can form crystals of sodium urate, particularly in your cartilage. Occasionally these crystals escape from the cartilage and trigger sudden painful inflammation of the joint lining.

What treatments are there?

Initial treatments for acute attacks include:

- non-steroidal anti-inflammatory drugs (NSAIDs)
- colchicine tablets

Gout is caused by a build-up of urate, which forms crystals in the joints.

- steroids (injected into the joint or muscle, or as tablets)
- ice packs.

Longer-term treatments aim to lower urate levels and reduce the risk of further attacks. These include:

- allopurinol or febuxostat (which reduce the amount of urate your body makes)
- uricosuric drugs (which increase the amount of urate your kidneys get rid of).

How can I help myself?

Try the following to reduce your risk of an attack:

- Lose weight if you're overweight.
- Eat less purine-rich foods (for example offal, oily fish, yeast extracts).
- Avoid dehydration by drinking plenty of water.
- Drink less alcohol (3–4 units per day for men, 2–3 units per day for women).
- Increase your intake of foods rich in vitamin C.

What is gout?

Gout is an intensely painful form of arthritis – it's said to be as painful as giving birth. Attacks of gout usually come on very quickly, often during the night. Doctors describe this sudden development of symptoms as 'acute'. Of all the forms of arthritis, gout is the one we understand the best, and this has led to a range of therapies to treat acute attacks and control the condition.

Gout is the most common type of inflammatory arthritis, affecting 1.4% of adults in the UK. It affects more men than women and can affect men of any age. Women rarely develop gout before the menopause. With more people living longer, gout is starting to become more common in women.

At one time it was thought that gout was caused simply by overeating and drinking too much alcohol. While this can make attacks of gout more likely, that's not the whole story.

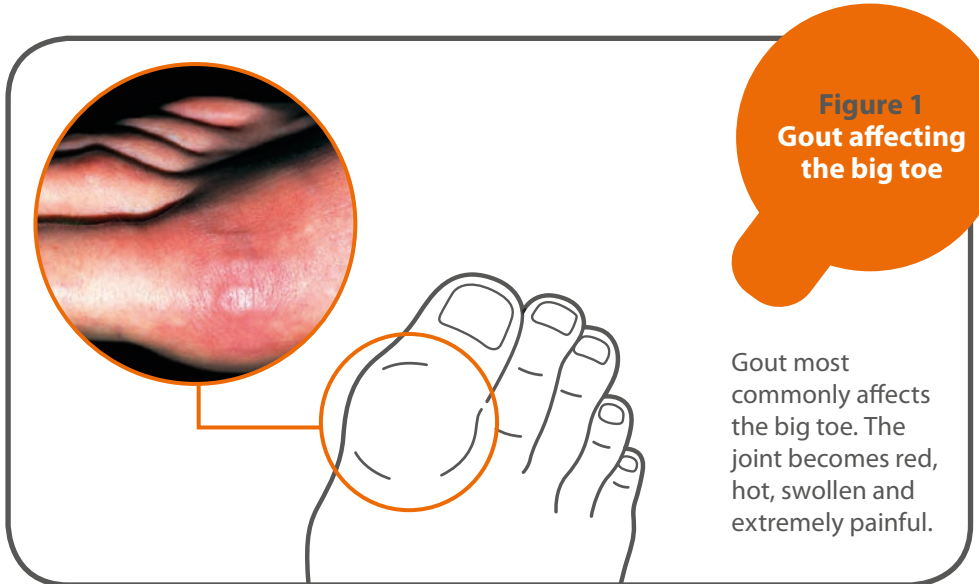
Gout is caused by certain chemical processes that take place in your body. A substance called urate builds up, sometimes because your kidneys aren't able to get rid of it quickly enough. Urate forms crystals in your joints, which can lead to painful inflammation. You may be more at risk of attacks of gout if any of your parents or grandparents had it.

What are the symptoms of gout?

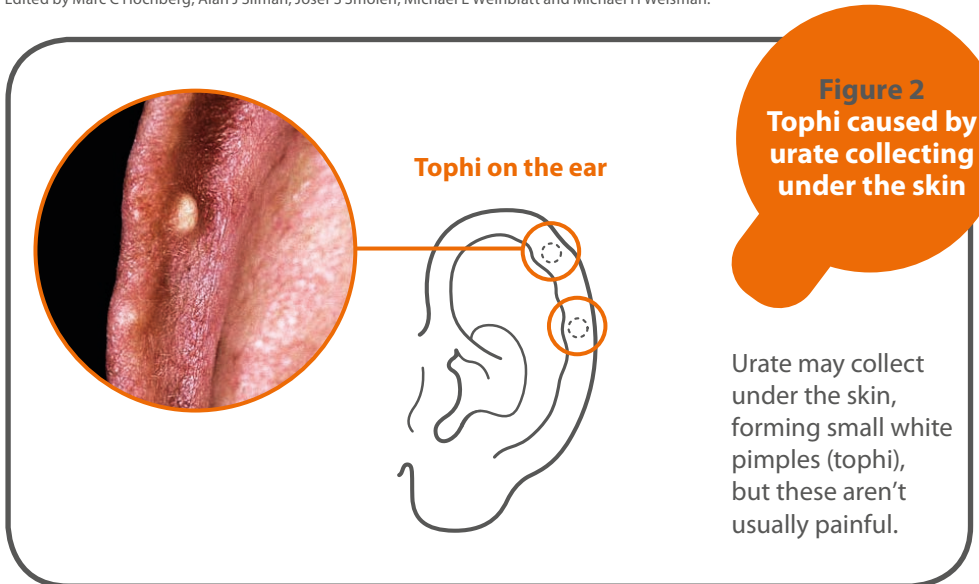
Urate crystals cause inflammation, meaning the affected joint becomes intensely painful, red, hot and swollen (see Figure 1). The skin over the joint often appears shiny and may peel. Attacks typically affect the big toe and usually start at night. The symptoms develop over just a few hours. Any contact with the affected joint is painful – even the weight of the bedclothes can cause pain.

Although gout most often affects the big toe, other joints may also be affected, including the midfoot, ankles, knees, elbows, wrists and fingers. If several joints are inflamed at once this is called polyarticular gout. It's very rare to have gout in joints towards the centre of the body such as the spine, shoulders or hips.

Urate crystals can also collect outside of the joints and even be seen under the skin, forming small, firm white lumps called tophi (see Figure 2). These aren't usually painful but sometimes they break down and leak pus-like fluid containing gritty white material – the urate crystals themselves.



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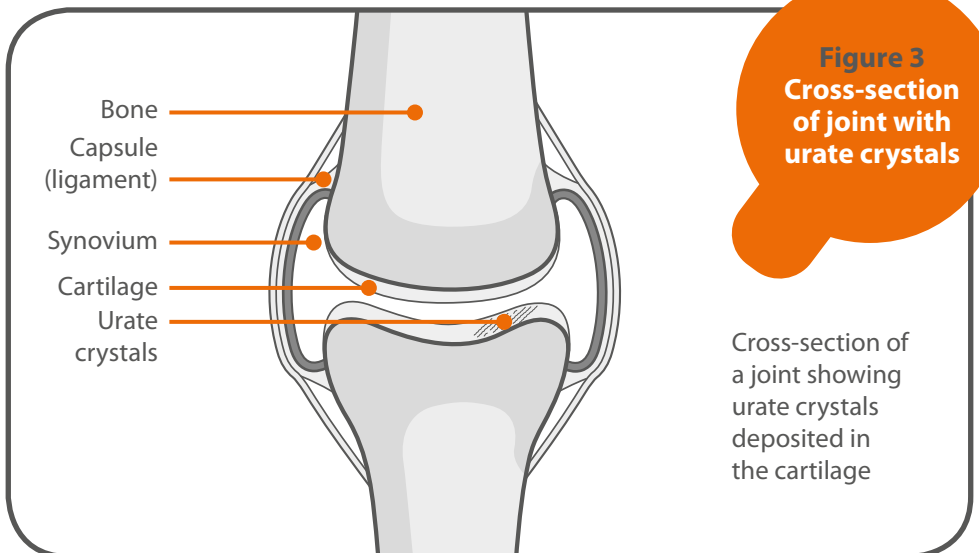
What causes gout?

Gout occurs in people who have higher-than-normal levels of urate in their blood. About two thirds of the urate in our bodies comes from the breakdown of purines which are naturally present in the cells of our bodies. The other third comes from the breakdown of purines in some of the foods we eat.

Having urate in your blood doesn't mean you'll definitely develop gout – it's normal and healthy to have some urate in the bloodstream, and the level is often higher in men than in women. When urate levels start to build up, your body usually gets rid of any excess urate through your kidneys into your urine; however, if your body is making too much urate or your kidneys are unable to remove enough urate, then urate levels start to rise.

If the level goes above a certain point (the saturation point), it's possible for urate to form crystals of sodium urate. These crystals mainly form in and around joint tissues, especially joints at the ends of your legs and arms, such as your finger and toe joints.

Figure 3 is a joint showing urate crystals. The crystals gradually build up in your cartilage and after some years can spill out into the joint cavity (the space between the bones). This process is called crystal shedding. The hard, needle-shaped crystals touch the soft lining of the joint (the synovium) and make it very inflamed very quickly. The inflammation process breaks down the crystals that have become loose inside the joint, and the attack gradually settles over a few days or weeks, depending on how many crystals spilled out.



Apart from causing sudden attacks of inflammation, a build-up of crystals can eventually lead to tophi forming in and around your joints. These hard tophi can grow and cause pressure damage to your cartilage and bone. This is just like the damage caused by osteoarthritis and can cause more regular, daily pain when the joints are used. At this stage the condition is often called chronic tophaceous gout. Some tophi may be seen and easily felt under the skin, but by this time the unseen part of the tophi may be quite extensive.

Several factors can affect the level of urate in your body:

- The genes you've inherited may make it more likely that your kidneys don't flush urate out of your body as well as they should, even though your kidneys are otherwise completely normal and healthy. This is one of the most common causes, especially when there are several family members affected.
- The bigger the body the more urate is produced each day, so if you're overweight or obese it could cause your body to make more urate than your kidneys can get rid of.
- If you have high levels of cholesterol and fats in your blood (a condition called hyperlipidaemia), high blood pressure or late-onset (type 2) diabetes, your kidneys won't be able to get rid of urate as well as they should, so all these conditions tend to be linked with raised urate levels. This combination of problems is often called metabolic syndrome.





- Kidney disease may mean that your kidneys aren't able to process urate as well as they should.
- Tablets such as diuretics (water tablets) drain water from your body and reduce your kidneys' ability to get rid of urate effectively. Ciclosporin also does this.
- Rarely, if you have a chronic blood disorder that causes your body to produce too many blood cells, the level of urate produced by the breakdown of those cells may be higher than your kidneys can cope with.

Where a particular cause can be identified (such as kidney disease or regular use of diuretics), the condition is called secondary gout. However, most gout is primary and is usually due to a combination of factors, for example, through having inherited kidneys that aren't very good at getting rid of urate and then becoming overweight.

If you're prone to gout, several things can encourage urate crystals to shake loose from your cartilage and trigger an acute attack. These can include:

- a knock or injury to the affected joint
- an illness, such as pneumonia or flu, that makes you feverish
- an operation – this also puts your temperature up a little
- overeating and drinking too much alcohol
- dehydration.

Similar attacks can be caused by a condition called acute calcium pyrophosphate crystal arthritis (acute CPP crystal arthritis), which was sometimes previously called 'pseudogout'. In this type of arthritis it's calcium crystals that are deposited in joint cartilage rather than urate crystals. Acute CPP crystal arthritis affects the knee and other joints more than the big toe and is most common in people with osteoarthritis.

i See Arthritis Research UK booklet
Calcium crystal diseases including acute CPP crystal arthritis (pseudogout) and acute calcific tendinitis.

What is the outlook?

Attacks can vary from person to person. Some people have an attack only every few years, while others have attacks every few months. In time, though, attacks tend to happen more often and new joints are affected.

Although the acute attacks of gout are very dramatic, the inflammation goes down fairly quickly and the attacks themselves probably don't cause long-term joint damage. However, a continued build-up of urate crystals and formation of hard tophi can damage your cartilage and bone, leading to long-term (chronic) arthritis.

With modern treatments and possibly some changes to your diet and lifestyle, this type of damage can usually be prevented by bringing urate levels in your

With treatment, once the attack has passed then further pain and joint damage is unlikely.

tissues down below the point at which crystals form.

Lowering your urate levels will prevent new crystals forming and slowly break down the crystals that are already there. It may take as long as two years of treatment to completely clear your body of urate crystals, but once they're gone then the risk of acute attacks of gout and of further joint damage from tophi is removed.

Because gout is associated with metabolic syndrome, you should pay special attention to your cholesterol levels, blood pressure and diabetes. If gout is left untreated, urate can sometimes form stones in your kidneys, so you may need tests to check how well your kidneys are working.

How is gout diagnosed?

What tests are there?

A diagnosis is often based on your symptoms and an examination of the affected joints, but your doctor may suggest you have the following tests:

A blood test can measure the amount of urate in your blood. A raised level of urate strongly supports a diagnosis of gout but can't confirm it – not everyone with a raised level of urate will develop crystals in their joints, and it's possible for urate levels in the blood to be normal at the time of an acute attack.

X-rays of joints will reveal joint damage if you have long-standing and poorly controlled gout. However, x-rays are rarely helpful in confirming the diagnosis because they're usually normal in the early years of having gout.

Synovial fluid examinations involve taking fluid samples from a joint through a needle and examining them under a microscope for urate crystals. This test can confirm the diagnosis but isn't always practical – it's difficult and sometimes uncomfortable to draw fluid from a small joint such as the big toe. However, it may be possible to identify a few crystals in a sample taken from your knee, even if you've not yet had an attack of gout there. A fine needle inserted into a tophus under your skin can also be used to identify urate crystals.

What treatments are there for gout?

There are two main parts to treating gout (see Figure 4). These are:

- treating the acute attack of inflammation
- ongoing treatment to get rid of urate crystals and reduce the level of urate in the blood.

If you only have occasional attacks of gout then you'll probably only need treatment to deal with those. But if your attacks start happening more often or blood tests show that urate levels are building up, you may need ongoing

treatment to reduce the urate in your blood and the risk of further attacks.

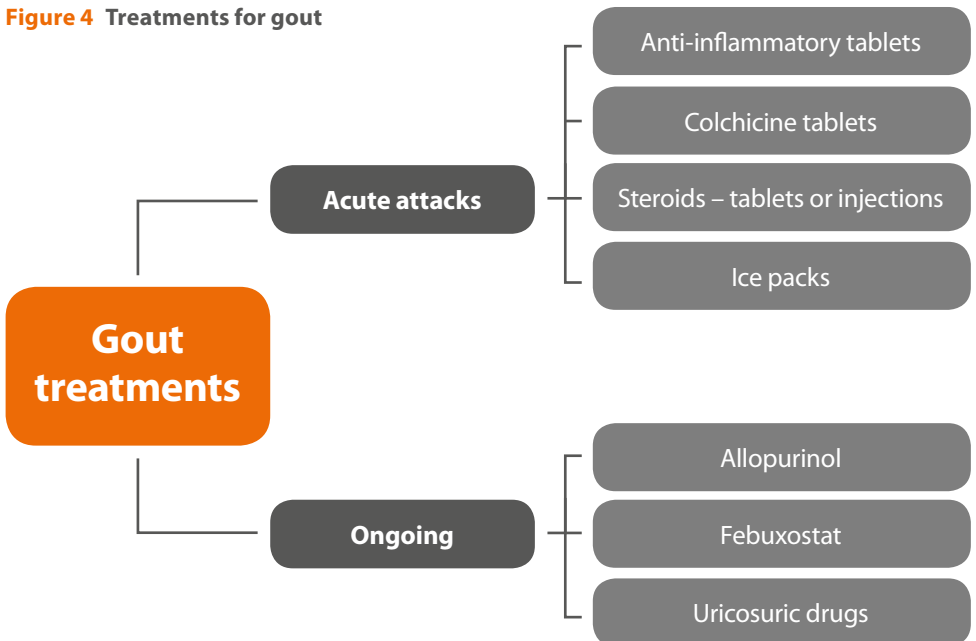
Treatments for acute attacks of gout

The two most commonly used drug treatments for acute attacks of gout are non-steroidal anti-inflammatory drugs (NSAIDs) and colchicine.

Non-steroidal anti-inflammatory drugs (NSAIDs)

Acute attacks of gout are often treated with oral non-steroidal anti-inflammatory drugs (NSAIDs). They can ease pain and possibly reduce some of the inflammation.

Figure 4 Treatments for gout



If you've had an attack before, be on the lookout for early signs of another attack and take your prescribed treatment as soon as possible. The earlier you start treating an acute attack the better.

If you only have occasional attacks of gout then you'll probably only need treatment to deal with those.

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Examples include ibuprofen, naproxen, diclofenac and etoricoxib.

Like all drugs, NSAIDs can sometimes have side-effects, but your doctor will take precautions to reduce the risk of these – for example, by prescribing the lowest effective dose for the shortest possible period of time.

NSAIDs can cause digestive problems (stomach upsets, indigestion, or damage to the lining of the stomach) so in most cases NSAIDs will be prescribed along with a drug called a proton pump inhibitor (PPI), which will help to protect your stomach.

NSAIDs also carry an increased risk of heart attack or stroke. Although the increased risk is small, your doctor will be cautious about prescribing NSAIDs if there are other factors that may increase your overall risk – for example, smoking, circulation problems, high blood pressure, high cholesterol or diabetes.

i See Arthritis Research UK drug leaflet *Non-steroidal anti-inflammatory drugs*.

Colchicine

Colchicine is made from the crocus plant. It's not a painkiller but it's often very effective at damping down the inflammation caused by the crystals touching the joint lining. As with NSAIDs, colchicine tablets should be taken at the very beginning of an attack. Your doctor

may let you keep a supply so you can start taking them at the first signs.

The recommended dose is 0.5 mg two to four times per day, depending on your size, age and whether you have other health problems. Some people are unable to take colchicine because they have side-effects such as nausea, vomiting or diarrhoea. For this reason it's best to start at a low dose and only increase it if there's no upset. You shouldn't take colchicine at the same time as NSAIDs.

You can also take colchicine in the longer term at a dose of 0.5 mg once or twice a day to reduce your risk of having attacks in the future. However, like NSAIDs, colchicine won't reduce the urate level in your blood, so it won't help to get rid of the urate crystals or prevent long-term joint damage.

Steroids

If an acute attack of gout doesn't improve with NSAIDs or colchicine or if you're at risk of side-effects from these drugs, your doctor may prescribe a steroid injection into the joint or muscle, or a short course of steroid tablets (usually no more than a few days).

i See Arthritis Research UK drug leaflets *Local steroid injections; Steroid tablets*.

Other treatments for acute attacks

Putting an ice pack on the affected area can reduce some of the swelling, heat and pain. They're very safe, but make sure that

you don't put the pack directly onto your skin to avoid burning or irritating your skin. You can buy reusable cooling pads from sports shops and chemists, or you can use a pack of frozen peas. You should always use ice packs alongside any drug treatments your doctor has prescribed.

Resting the painful inflamed joint also takes some of the edge off severe pain. A cage over the affected foot or knee to take the weight of the bedclothes at night can help.

Ongoing treatments to reduce urate

The drugs given to ease an acute attack don't get rid of the urate crystals in your joints or reduce the level of urate in your blood. In some cases your doctor may recommend that you start taking a urate-lowering drug once a day with the aim of getting rid of the urate crystals. This is most likely if:

- you're having attacks more often
- you have tophi, kidney stones or any signs of joint damage
- tests show that you have a very high level of urate in your blood.

You may still have acute attacks when you first begin the treatment, so you may wish to take daily NSAIDs or colchicine to dampen down inflammation while your urate level is brought down. You'll be at risk of acute attacks for at least six months and probably longer. It can take as long as

two years to clear your body completely of urate crystals.

Urate-lowering drugs are usually very well tolerated, but you might have to stop using them if you have side-effects such as a rash or indigestion (dyspepsia). Aside from this, you should continue to take them until your doctor tells you to stop. It's important to take them as prescribed because missing doses, especially in the early stages, can cause your urate level to go up and down, which seems to trigger acute attacks.

It's also important to consider other ways of reducing your urate levels – for example, by losing weight if you're overweight and by changing your diet. If you have other features of metabolic syndrome (high blood pressure, high lipids, diabetes), good control of these will also help to reduce your urate levels.

Allopurinol

Allopurinol is the most commonly used urate-lowering drug. It works by reducing the amount of urate that your body makes and is usually taken once a day.

Your doctor will measure the level of urate in your blood and will probably start you on a dose of 100 mg a day. If your urate level hasn't come down enough after a month, your dose will be increased by 100 mg. You may need several dose increases of 100 mg roughly each month until you're at the right dose that keeps the blood urate level well below the

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saturation point. The maximum dose of allopurinol is 900 mg but most people reach the target urate level by taking 200–500 mg. Allopurinol is available as 100 mg and 300 mg tablets so you don't need to take a lot of tablets if you need a higher dose.

Once the urate level is well below the saturation point, you should continue on that dose of allopurinol with repeat blood checks every 12 months or so to make sure that your urate level is still low. The main reason not to start with a large dose is that lowering urate levels quickly can actually trigger an acute attack. This is probably because the crystals in your cartilage become smaller as they start to break down, which allows them to shake loose more easily and shed into the joint cavity. Bringing urate levels down slowly by gradually increasing the dose of allopurinol is much less likely to trigger an acute attack.

Increasing the dose gradually is also less likely to result in side-effects such as a rash, headaches or nausea. If you do develop any side-effects soon after starting allopurinol, you should stop taking the tablets and see your doctor, who will advise whether you should restart the tablets and what special care you should take.

It's also important to consider other ways of reducing your urate levels – for example, by losing weight if you're overweight and changing your diet.

- ! It's important to keep taking allopurinol. The most common reason for allopurinol not working is the patient not taking the drug regularly or at the correct dose.



Allopurinol can affect some other tablets, especially warfarin and azathioprine. If you have to take either of these drugs for any reason, you **must** tell the doctor who prescribes them that you're also taking allopurinol. The dose of the other drug may need to be adjusted.

i See Arthritis Research UK drug leaflets *Allopurinol; Azathioprine*.

Febuxostat

Febuxostat is another drug that has recently become available. Like allopurinol, it reduces the the amount of urate made in your body, but unlike allopurinol it's broken down by your liver and is therefore particularly useful if you have kidney problems and can't take a high enough dose of allopurinol.

Febuxostat comes in just two doses. The starting dose is 80 mg, which is quite strong and may trigger acute attacks, so it's recommended that you take a daily NSAID or colchicine for at least six months to help protect against this. If your urate levels haven't lowered after a month, the dose of febuxostat can be increased to 120 mg daily.

There have been concerns about people with some heart conditions taking febuxostat. Current research suggests it's probably safe for these people, but more research is being carried out. If you're not sure whether you should be taking febuxostat, discuss your concerns with your doctor.

i See Arthritis Research UK drug leaflet *Febuxostat*.

Other urate-lowering drugs

Uricosuric drugs, which include sulfinpyrazone, benzbromarone and probenecid, work by flushing out more urate than normal through your kidneys. These drugs may not be suitable if you've had kidney stones or similar disorders. They're not widely used in the UK, but they may be a useful alternative if allopurinol isn't suitable for you.

Other drugs for treating acute attacks and for lowering urate are in development now and it's likely that new drugs will become available in the future. Pegloticase is a new drug which can reduce urate levels and is given as a regular injection into your vein. It's likely



that this will be used in only the most severe cases which haven't improved with normal treatment.

Treatment of joint damage

If gout has already caused joint damage, the treatment will be the same as for osteoarthritis, including:

- losing weight if overweight
- daily exercise (both muscle-strengthening exercise and general [aerobic exercise](#))
- reducing strain on the affected joint (for example, by pacing your activities and wearing the right footwear)
- painkillers (for example paracetamol, codeine)
- anti-inflammatory creams and gels
- anti-inflammatory tablets
- topical capsaicin cream
- steroid injections into the painful joint
- surgery, including joint replacement.

i See Arthritis Research UK booklets *Osteoarthritis; Osteoarthritis of the knee*.

Self-help and daily living

Diet and nutrition

There are a number of changes you can make to your diet to ease attacks of gout. The most useful things you can do are:

- losing weight

- drinking less alcohol
- drinking plenty of water.

Weight loss

Losing weight, if you need to, is the most effective dietary treatment for gout because it can greatly reduce the urate levels in your body.

- ! **Weight loss should be gradual and combined with daily exercise. Extreme weight loss or starvation diets increase cell breakdown in the body, which can raise urate levels.**

We don't recommend Atkins-type weight-loss diets for people who are prone to gout. These diets include a lot of meat and are therefore high in animal proteins, which are high in purines and which break down to produce urate.

Fluids

Drinking plenty of water may reduce the risk of triggering an attack and of urate forming crystals in joint tissues. If you have kidney stones you may need as much as 3.5 litres (6 pints) a day. Even if you don't have kidney stones you should aim for at least 1 litre (2 pints) of fluid a day.

You can include some other fluids besides water in this total but not beer or other alcoholic drinks. However, many soft drinks contain large amounts of sugar, in the form of fructose. Keep these to a minimum as fructose sugar is likely to increase the level of urate in the blood. Diet soft drinks don't appear to increase the risk of gout.

There's some research which suggests that drinking coffee regularly may help by increasing the amount of urate your kidneys get rid of. This doesn't appear

to be due to caffeine but to some other factor that we don't know about yet.

Drinking a glass of skimmed milk every day may help to prevent attacks of gout.

Figure 5 Approximate units of alcohol in some popular drinks

Drink	Units	Drink	Units
Beer, lager, stout		Cider (continued)	
Ordinary strength (4% abv)		Strong (9% abv)	
Bottle (330 ml)	1.3 units	Bottle (330 ml)	3 units
Can (440 ml)	1.8 units	Can (440 ml)	4 units
Pint (568 ml)	2.3 units	Pint (568 ml)	5.1 units
Premium strength (5% abv)		Wine, red or white (13% abv)	
Bottle (330 ml)	1.7 units	Standard glass (175 ml)	2.3 units
Can (440 ml)	2.2 units	Large glass (250 ml)	3.2 units
Pint (568 ml)	2.8 units	Gin, rum, vodka, whisky (40% abv)	
Lager		Small measure (25 ml)	1 unit
Super strength (9% abv)		Large measure (35 ml)	1.4 units
Bottle (330 ml)	3 units	Sherry, port (20% abv)	
Can (440 ml)	4 units	Standard measure (50 ml)	1 unit
Pint (568 ml)	5.1 units	Alcopops (5% abv)	
Cider		Bottle (275 ml)	1.4 units
Ordinary strength (6% abv)			
Bottle (330 ml)	2 units		
Can (440 ml)	2.6 units		
Pint (568 ml)	3.4 units		

NOTE: These figures are based on typical strengths for the drinks shown; actual strengths vary from one brand to another. Bear in mind also that 'measures' poured at home are often much larger than the standard pub measures shown.

Alcohol

Drinking too much alcohol, especially beer and spirits, is associated with gout. A moderate intake of wine doesn't appear to increase the risk. It's important for many reasons to keep your alcohol intake well below the levels recommended by the government: 3–4 units a day for men and 2–3 units a day for women. Remember that units are calculated from the strength of the drink as well as the quantity. See Figure 5 for approximate units of alcohol in some popular drinks.

❗ It's a good idea to have at least two alcohol-free days a week – but without compensating over the remaining five days.

Other diet tips

Limiting your intake of foods that are particularly high in purines may be helpful, whether or not you need to lose weight. These include:

- **red meat and offal** – for example beef, kidneys, liver, sweetbreads
- **oily fish** – for example anchovies, fish roes, herring, mackerel, sardines
- **foods rich in yeast extracts** – for example Marmite, Bovril, Vegemite.

Aim to reduce the amount of protein you get from meat. Try replacing one portion of meat or fish a day with other sources of protein, such as beans, eggs, pulses or low-fat dairy products.

Vitamin C encourages the kidneys to excrete more urate, so a diet rich in vitamin C may be helpful. This is another

reason to make sure your diet includes plenty of fruit and vegetables. There's some evidence that cherries may be beneficial – either the fruit or the juice, fresh or preserved – and this may be due to more than the vitamin C content.

Complementary medicine

There's little evidence for many of the other natural or herbal remedies and supplements available for gout. These include celery seeds, garlic, artichokes and saponins (natural compounds found in peas, beans and some other vegetables).

Generally speaking, though, complementary and alternative therapies are relatively well tolerated, but you should always discuss their use with your doctor before starting treatment. There are some risks associated with specific therapies.

Ongoing research is greatly increasing our understanding of what triggers gout and how new therapies may be developed to treat it.

In many cases the risks associated with complementary and alternative therapies are more to do with the therapist than the therapy. This is why it's important to go to a legally registered therapist, or one who has a set ethical code and is fully insured.

If you decide to try therapies or supplements you should be critical of what they're doing for you, and base your decision to continue on whether you notice any improvement.

Research and new developments

Ongoing research is greatly increasing our understanding of what triggers gout and how new therapies may be developed to treat it. A preliminary study funded by Arthritis Research UK is also aiming to find out if more people with gout could be helped by treatment including urate-lowering drugs, together with dietary and weight loss advice, rather than simply treating the symptoms of acute attacks. This could lead to a full-scale clinical trial to establish the most effective package of treatment for people with gout.



Glossary

Aerobic exercise – any exercise that increases your pulse rate and makes you a bit short of breath.

Azathioprine – a drug commonly used to help prevent rejection of transplanted organs. It works by suppressing the body's immune system and is also used in rheumatoid arthritis to prevent the immune system attacking the joints.

Cartilage – a layer of tough, slippery tissue that covers the ends of the bones in a joint. It acts as a shock absorber and allows smooth movement between bones.

Ciclosporin – a type of disease-modifying anti-rheumatic drug used to treat auto-immune conditions like rheumatoid arthritis. It dampens down the disease process rather than simply treating symptoms.

Dehydration – a condition where the normal water content of your body is reduced. The human body is about two-thirds water. The amount of water in the body only has to be reduced by a few per cent before the chemical balance in the body is affected. Dehydration can be caused by illness, exhaustion or not drinking enough fluids.

Diabetes – a medical condition that affects the body's ability to use glucose (sugar) for energy. The body needs insulin, normally produced in the pancreas, in order to use glucose. In diabetes the body may produce no insulin or not enough insulin, or it may become resistant to insulin. When the body is unable to use

glucose obtained from foods, the level of sugar in the blood increases. If untreated, raised blood sugar can cause a wide variety of symptoms.

Inflammation – a normal reaction to injury or infection of living tissues. The flow of blood increases, resulting in heat and redness in the affected tissues, and fluid and cells leak into the tissue, causing swelling.

Menopause – the time when menstruation ends, usually when a woman is in her 50s. This means the ovaries stop releasing eggs every four weeks, and it's no longer possible to have children. If this happens before the age of 45, it's known as premature menopause.

Non-steroidal anti-inflammatory drugs (NSAIDs) – a large family of drugs prescribed for different kinds of arthritis that reduce inflammation and control pain, swelling and stiffness. Common examples include ibuprofen, naproxen and diclofenac.

Osteoarthritis – the most common form of arthritis (mainly affecting the joints in the fingers, knees, hips), causing cartilage thinning and bony overgrowths (osteophytes) and resulting in pain, swelling and stiffness.

Proton pump inhibitor (PPI) – a drug that acts on an enzyme in the cells of the stomach to reduce the secretion of gastric acid. They're often prescribed along with non-steroidal anti-inflammatory drugs (NSAIDs) to reduce their side-effects.

Purines – nitrogen-containing compounds, found mostly in nucleic acids – DNA and RNA. The body breaks purines down to uric acid, which passes from the body via the urine.

Steroids (corticosteroids) – drugs that have a very powerful effect on inflammation. The adrenal glands in the body produce a natural supply but much larger doses are used to treat autoimmune diseases. Prednisolone is the most commonly used steroid.

Synovial fluid – the fluid produced within the joint capsule that helps to nourish the cartilage and lubricate the joint.

Synovium – the inner membrane of the joint capsule that produces synovial fluid.

Urate – a salt of uric acid, which forms as old cells are broken down and foods are digested within the body. It's normally expelled in the urine but can sometimes build up and form crystals that are deposited in the joints or under the skin.

Warfarin – a drug used to prevent blood clots from forming or growing larger. It works by 'thinning' the blood, making it less 'sticky' and reducing the blood's ability to clot.

Where can I find out more?

If you've found this information useful you might be interested in these other titles from our range:

Conditions

- *Calcium crystal diseases including acute CPP crystal arthritis (pseudogout) and acute calcific tendinitis*
- *Osteoarthritis*
- *Osteoarthritis of the knee*

Self-help and daily living

- *Diet and arthritis*
- *Pain and arthritis*

Therapies

- *Complementary and alternative medicine for arthritis*

Drug leaflets

- *Allopurinol*
- *Azathioprine*
- *Non-steroidal anti-inflammatory drugs*
- *Local steroid injections*
- *Steroid tablets*

You can download all of our booklets and leaflets from our website or order them by contacting:

Arthritis Research UK

Copeman House
St Mary's Court
St Mary's Gate, Chesterfield
Derbyshire S41 7TD
Phone: 0300 790 0400
www.arthritisresearchuk.org

Related organisations

The following organisations may be able to provide additional advice and information:

Arthritis Care

Floor 4, Linen Court
10 East Road
London N1 6AD
Phone: 0207 380 6500
Helpline: 0808 800 4050
Email: info@arthritiscare.org.uk
www.arthritiscare.org.uk

British Dietetic Association

5th Floor Charles House
148–49 Great Charles Street Queensway
Birmingham B3 3HT
Phone: 0121 200 8080
www.bda.uk.com

NHS alcohol information website

www.nhs.uk/Livewell/alcohol/Pages/Alcoholhome.aspx

UK Gout Society

PO Box 527
London
London WC1V 7YP
Email: info@ukgoutsociety.org
www.ukgoutsociety.org

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We're here to help

Arthritis Research UK is the charity leading the fight against arthritis.

We're the UK's fourth largest medical research charity and fund scientific and medical research into all types of arthritis and musculoskeletal conditions.

We're working to take the pain away for sufferers with all forms of arthritis and helping people to remain active. We'll do this by funding high-quality research, providing information and campaigning.

Everything we do is underpinned by research.

We publish over 60 information booklets which help people affected by arthritis to understand more about the condition, its treatment, therapies and how to help themselves.

We also produce a range of separate leaflets on many of the drugs used for arthritis and related conditions. We recommend that you read the relevant leaflet for more detailed information about your medication.

Please also let us know if you'd like to receive our quarterly magazine, *Arthritis Today*, which keeps you up to date with current research and education news, highlighting key projects that we're

funding and giving insight into the latest treatment and self-help available.

We often feature case studies and have regular columns for questions and answers, as well as readers' hints and tips for managing arthritis.

Tell us what you think

Please send your views to:

feedback@arthritisresearchuk.org

or write to us at:

Arthritis Research UK, Copeman House, St Mary's Court, St Mary's Gate, Chesterfield, Derbyshire S41 7TD

A team of people contributed to this booklet. The original text was written by Dr Mike Snaith and revised by Prof. Mike Doherty, who have expertise in the subject. It was assessed at draft stage by clinical nurse specialist Heather Burbidge, musculoskeletal physician Peter Skew and rheumatology nurse specialist Alison Wilson. An **Arthritis Research UK** editor revised the text to make it easy to read, and a non-medical panel, including interested societies, checked it for understanding. An **Arthritis Research UK** medical advisor, Dr Ben Thompson, is responsible for the content overall.

Get involved

You can help to take the pain away from millions of people in the UK by:

- volunteering
- supporting our campaigns
- taking part in a fundraising event
- making a donation
- asking your company to support us
- buying products from our online and high-street shops.

To get more **actively involved**, please call us on **0300 790 0400**, email us at **enquiries@arthritisresearchuk.org** or go to **www.arthritisresearchuk.org**



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