

## What is gout?

Gout is a type of arthritis where swelling and severe pain develops rapidly in joints, especially at the base of the big toe. Gout affects approximately one in 30 adults, most commonly men between 30-80 years of age. Gout less commonly affects women. Gout is one of the few types of arthritis where future damage in joints can be avoided by treatment.

## What causes it?

Our bodies all have a breakdown product called urate (or uric acid). Most urate (about three quarters) is produced by the body but a quarter comes from our diet. Urate comes from a breakdown of substances known as purines and usually passes out mainly in our urine (75%) and to a lesser extent through our bowels.

If urate does not easily pass out of the body, or if you produce too much, the level can go above a critical concentration point called "saturation point". If the level of urate remains above this critical point this is enough of it to precipitate out as sodium urate crystals. These particularly form round the cooler joints, at the ends of our limbs - the foot, knees, fingers, wrists and elbows.

Urate crystals form slowly over many years and you will not know this is happening. However, once there are sufficient crystals in a joint some can spill over from the cartilage where they form and trigger a very painful episode of joint inflammation. Also, crystals forming within cartilage and bone can clump together to form hard lumps ('tophi') that slowly grow in size. This causes irreversible joint damage and subsequent daily pain when the joints are used.

Purines are found naturally in the body and in some foods such as shellfish, red meat and offal and drinks such as beer and stout. Regular high intake of purine-rich food and drink can increase urate levels. High fructose levels in many fizzy drinks also increase urate levels. Urate builds up either because too much is being produced by the body or not enough is being excreted. Chronic kidney disease is an important cause of raised urate levels but many drugs reduce excretion of urate by the kidney including diuretics and other drugs used to control blood pressure.

## REAL LIFE STORY

‘ I first had a gout attack when in my early 40s. It was very painful. I went to a specialist who prescribed me allopurinol.

I looked for a link with foods, but never found any correlation with purines or any other food. My job involved a lot of travel. Long aeroplane journeys and no exercise for a few days seemed to invite trouble. Hot climates too were a danger and I learned to drink plenty of water.

One big toe has become very inflexible and the joints get a little painful after a long walk but otherwise I have no other problems. ’

Not everyone with high urate levels will develop gout. We do not know why some people are especially prone to form crystals although osteoarthritic joints form crystals more easily than normal joints. However, if you are overweight you are more likely to develop gout because more urate is being produced by your body. A good diet and weight loss will reduce your chance of developing gout.

According to the latest research a number of common genes also play a part in increasing your risk of developing gout, mainly by reducing your kidney's ability to easily excrete urate. Certain people, for example, the Maori in New Zealand and the Taiwanese are very prone to gout, again because they inherit kidneys that are not very efficient at getting rid of urate.

## What triggers a painful gout attack?

**The following are risk factors for an attack of gout:**

- if your body is stressed through having a severe illness (e.g. pneumonia), fever or surgical operation
- if you injure a joint that contains crystals it can “shake loose” the crystals and trigger an attack. If you are prone to gout, and you have more pain in a joint than you would expect after a minor bump, it could be an attack coming on, so get treatment straight away
- if you have a large meal rich in fatty acids or an excessive amount of beer and spirits. This can increase the reaction between the crystals and your joint lining to trigger the onset of inflammation
- dehydration

Acute calcium pyrophosphate crystal arthritis (“pseudogout”) is a similar condition to gout, where sudden attacks of inflammation affect a joint. It is caused by calcium phosphate crystals, not urate crystals, and usually affects knees, shoulders or wrists, rather than toes. It is treated differently to gout, and is not covered by this factsheet.

## How will it affect me?

The first attack of gout often first affects the big toe, but attacks can occur in other joints such as ankles, knees, hands, wrists or elbows, especially in people who get gout when they are older. A joint will start to hurt, but within just a few hours will become extremely painful (often the “worst pain ever”), swell up and become red, hot and extremely tender to touch. The joint may look as if it has a boil on it, or the skin can become shiny and peeling. The joint will be stiff. You might also get a temperature and feel sweaty and tired.

An attack of gout can last from a few days to a couple of weeks, but having been at its worst within the first 12-24 hours, it will settle down even without treatment, apparently back to normal. There can be years between attacks, but often the frequency increases with time and new joints start to be involved. If you develop joint damage because of your gout (chronic gout) then you may notice daily pain and reduced movement of your joint when you are using it.

Some patients also form crystal filled “tophi” under their skin which appear as small to large firm lumps, often with a white or yellow colouration, especially on your fingers, feet or elbows. Tophi can be painful and occasionally break down and release pus-like discharge containing the white gritty crystal clumps. High urate levels also increase the likelihood of developing calcium-containing kidney stones, as well as stones made just of urate.

## How is gout treated?

- Non-steroidal anti-inflammatory drugs (NSAIDs). Very bad (acute) attacks of gout are usually treated with NSAIDs. These are pain-killers that also help reduce inflammation. Naproxen, ibuprofen, celecoxib and diclofenac are examples of NSAIDs. A proton pump inhibitor (PPI) should be taken with the NSAID to reduce the likelihood of stomach ulceration and it also helps to take the NSAID with or straight after food. NSAIDs are ideally taken at the very first sign of an attack before it has become full blown. NSAIDs should not be taken if you have chronic kidney problems, have ever had a stomach ulcer, or are on certain other drugs (e.g. water tablets and blood-pressure tablets or warfarin)
- Cortisone type drugs (corticosteroids). Inserting a needle directly into the affected joint to draw off the fluid collection (“aspiration”) and inject back corticosteroid is a very quick and safe way of rapidly easing the severe pain and joint inflammation. Corticosteroid may also be given as a course of daily tablets. This is often the best option if you are unable to take, or cannot tolerate, an NSAID or colchicine
- Colchicine tablets could be an option if you cannot take NSAIDs. Colchicine is a plant product obtained from the meadow crocus. It should only be used in low doses because it can cause diarrhoea and nausea at higher doses. Unlike an NSAID it is not a pain-killer but can prevent the development of inflammation. It only helps if it is started during the first day of the attack.

## How can gout be treated long-term?

Current guidelines support the use of urate-lowering drugs for people with severe gout, defined by frequent recurrent attacks, joint damage, evident tophi on clinical examination or kidney stones. Such drugs have the potential to reduce and maintain the urate level below the saturation point (equivalent to a serum urate level of 360  $\mu\text{mol/L}$  or 6mg/dl). Once this happens it is impossible to form any new crystals, and existing crystals are slowly dissolved away - this means no more acute attacks, eventual disappearance of any tophi, and removal of the risk of further joint damage from urate crystals (i.e. “cure” by removal of the agent that causes gout). Increasingly, it is being suggested that the option of urate-lowering drug treatment should at least be discussed with every patient with gout close to the time of first diagnosis, rather than wait until things have got much worse, and to involve patients in the decision to treat or not. The following are the two main urate-lowering drugs which work by reducing the production of urate.

- Allopurinol. This is the most widely used and well-established drug, and the one to be considered first. It should be started at a low dose (100 mg daily), and then increased in 100 mg increments roughly every month until the serum urate level is well below the target level (i.e the saturation point defined above). The maximum dose is 900 mg daily but most people reach the target at around 400mg daily. About one in ten people cannot tolerate allopurinol due to adverse reactions. A rare side effect is a severe allergic skin rash with drowsiness, dizziness, vomiting and fever. Contact your doctor if this happens. Allopurinol is broken down and excreted through the kidney – if you have chronic kidney impairment more caution is needed if the dose is increased.

- Febuxostat is a newer drug, and is advised by the National Institute for Health and Care Excellence (NICE) as the second choice drug for people who cannot tolerate allopurinol. It should be started at the lowest dose (80 mg daily) and increased a month later to the top dose (120 mg daily) if the target serum urate level is not reached. It too is generally well tolerated but can cause occasional adverse reactions in about one in 10 people. Both doses are relatively strong and paradoxically can provoke acute attacks of gout, probably by starting to dissolve crystals and make them shake loose more easily into the joint cavity (this is less likely on the multiple upward titration that is possible with allopurinol). Therefore your doctor may discuss regular daily low dose colchicine or an NSAID as “prophylaxis” to reduce the likelihood of causing more attacks than expected.

Other urate-lowering drugs are available which work by increasing the elimination of urate through the kidney. These, however, are usually reserved for people who cannot tolerate allopurinol or febuxostat and are mainly prescribed by hospital specialists.

## What can I do to help myself?

### How to help yourself during an attack of gout

- An ice-pack (or pack of frozen peas), wrapped in a cloth, can be put on the sore joint for 30 minutes, several times a day, to bring relief and reduce inflammation.
- A frame over your foot to keep bedclothes off it can relieve pain at night.

### How to manage the effects on your life

- If you are overweight, losing weight very gradually can help reduce the amount of urate in your blood. Do not go on a starvation diet since this may precipitate an acute attack.
- Moderate exercise is very important for keeping your joints moving. A physiotherapist can give you exercises that are right for you.
- If you regularly drink excess amounts of beer or spirits then reduce to the recommended levels. If you have a particularly large meal and plenty of beer or spirits that may make it more likely for gout to flare up.
- Drink lots of water – between 1.5 and 2.5 litres a day (six to eight glasses) to help prevent kidney stones. Drinking five or more cups of coffee daily has been shown to increase the amount of uric acid that is excreted. For the best advice on how much water you should drink, talk to your doctor.
- While it is helpful to cut down on foods which contain purines, 70 per cent of purines are produced by the body. The foods with the highest amounts of purines are: liver, offal, oily fish (herring, mackerel, sardines, fish roe, anchovies), beer, yeast and yeast extracts (like Marmite). There are other foods with purines in them – ask your doctor or nurse for a full list.

## Who will I see?

If you think you have gout (or any kind of arthritis), see your GP. An infected joint can look the same as gout, so the doctor will need to rule that out. They might do a blood test to measure the amount of urate in your blood. They might also take some of the fluid from around a joint and get it tested to see if it contains any crystals. Also avoid drinking fructose rich drinks and foods - these increase your body's production of urate.

It is important to discuss with your doctor not only how to treat an acute attack of gout, but also how to prevent another attack and manage the condition. If your gout is severe and keeps flaring up, your doctor may suggest you see a rheumatologist – a specialist or consultant based at a hospital. They may be able to advise on taking stronger drugs like corticosteroids.

Rheumatologists work with a healthcare team which could include:

- a nurse practitioner who can help you learn about the condition and how to live with it
- an occupational therapist who can assess whether you need any extra equipment to cope at home
- a podiatrist who can assess whether you need special foot care, and advise on the right shoes or insoles.

## Where can I get more information and support?

**Arthritis Care** is the UK's largest charity working with and for all people who have arthritis.

We are here to help you make positive choices through our information, website, self-management training, and professional helpline. Call the free helpline for confidential support on 0808 800 4050 (09:30-17:00 weekdays) or email: [Helplines@arthritiscare.org.uk](mailto:Helplines@arthritiscare.org.uk)

You can find support from others with arthritis by joining our online discussion forums.



Arthritis Care and Arthritis Research UK have joined together to help more people live well with arthritis. Read how at [arthritismerger.org](http://arthritismerger.org). All donations will now go to Arthritis Research UK and be used to help people with arthritis live full and active lives in communities across England and Wales, Scotland, and Northern Ireland.

Registered Charity Number 207711, SC041156.

**[www.arthritiscare.org.uk](http://www.arthritiscare.org.uk)**

## Other organisations

**UK Gout Society** for information about the condition. Email: [info@ukgoutsociety.org](mailto:info@ukgoutsociety.org) or write to:  
UK Gout Society Secretariat,  
PO Box 527, London  
WC1V 7YP.

**Our factsheets are reviewed every 3 years. Please check our website for up-to-date information and reference sources or call 020 7380 6577.**

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## Contact us

For confidential information and support about treatments, available care and adapting your life, contact the Arthritis Care Helpline

**Freephone: 0808 800 4050**

09:30-17:00 (weekdays)

Email: [Helplines@arthritiscare.org.uk](mailto:Helplines@arthritiscare.org.uk)

For information about Arthritis Care and the services we offer, contact us at: **[www.arthritiscare.org.uk](http://www.arthritiscare.org.uk)**

You can also talk to other people who are living with arthritis through the discussion forums on our website.

**Arthritis Care in England:** 0844 888 2111 or 020 7380 6509/10/11

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