Gout

This booklet provides information and answers to your questions about this condition.
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 of gout. 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 in the booklet.

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Gout can be intensely 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 and rapidly developing pain 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 occurs when the body is unable to flush out excess uric acid or urate (produced by the body’s own cells by the breakdown of food). When urate builds up above a certain level it can form crystals of sodium urate, particularly in the joint 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:
• ice packs
• non-steroidal anti-inflammatory drugs (NSAIDs)
• colchicine tablets

• steroids (injected into the joint or muscle, or as tablets).

Longer term treatments aim to lower urate levels and reduce the risk of further attacks. These include:
• allopurinol or febuxostat (which reduce urate production by the body)
• uricosuric drugs (which increase excretion of urate by the kidney).

How can I help myself?
Try the following to reduce your risk of attack:
• Lose weight if overweight.
• Eat less purine-rich foods (e.g. 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 childbirth. Attacks of gout usually come on very quickly (doctors describe the sudden onset of symptoms as acute), often during the night. 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 but may do so later in life. 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 eating and drinking too much. While it’s true that over-indulging in alcohol or food can make attacks of gout more likely, that’s not the whole story.

People get gout because of certain chemical processes that take place within the body. A substance called urate builds up (sometimes because the kidneys aren’t able to get rid of it quickly enough) and forms crystals in the joints, which can lead to painful inflammation. A tendency to attacks of gout may be inherited from a parent or a grandparent.

What are the symptoms of gout?
Urate crystals cause inflammation, meaning the 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 in the legs and arms 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 visible under the skin, forming small, firm white lumps called tophi (see Figure 2). These aren’t usually painful but sometimes they break down and discharge pus-like fluid containing gritty white material, the urate crystals themselves.
Gout most commonly affects the big toe. The joint becomes red, hot, swollen and extremely painful.

Urate may collect under the skin forming small white pimplies (tophi), but these aren’t usually painful.
What causes gout?

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

But the presence of urate in the blood does not itself lead to gout. It's normal and healthy to have some urate in the bloodstream, and the level is usually higher in men than in women. When urate levels start to build up, the body normally rids itself of any excess urate through the kidneys into the urine.

If the body is making too much urate or if the kidneys are unable to remove excess urate effectively, then urate levels start to rise. If the level goes above a certain critical concentration (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 the legs and arms, such as the finger and toe joints.

Figure 3 is a joint showing urate crystals. The crystals gradually build up in the cartilage and after some years can spill out into the joint cavity (this is known as crystal shedding). The hard, needle-shaped crystals come into contact with the soft lining of the joint (the synovium) and make it very inflamed very quickly. The inflammation process dissolves the few crystals that have got loose inside the joint, and the attack gradually settles over a few days or weeks, depending on how many crystals were shed.

![Figure 3 Cross-section of joint with urate crystals]

Cross-section of a joint showing urate crystals deposited in the cartilage.
Apart from causing sudden attacks of inflammation, a build-up of crystals can eventually lead to the formation of stones called tophi in and around the joints. These hard tophi can grow and cause pressure damage to the joint 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 the time they’re visible from the outside the unseen part of the tophi may be quite extensive.

There are several factors that can affect the level of urate in our bodies:

- An inherited (genetic) tendency may make some people’s kidneys less efficient at clearing urate, even though the 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 being overweight or obese may overwhelm the kidneys’ ability to get rid of the urate effectively.

- High levels of cholesterol and lipids (fats) in the blood (hyperlipidaemia), high blood pressure and late-onset (Type 2) diabetes all reduce the kidneys’ ability to excrete urate efficiently, and all these conditions tend to be associated 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 the body and reduce the kidneys’ ability to get rid of urate effectively. Other drugs that do this include low-dose aspirin and ciclosporin.

Rarely, in chronic blood disorders where the body produces too many blood cells, urate produced by the breakdown of those cells may be more than the kidneys can cope with.

Where a definite cause can be identified (such as kidney disease or regular use of diuretic drugs), the condition is described as 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 efficient at getting rid of urate and then getting a little overweight.

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

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

Similar attacks can be caused by calcium crystals that are deposited in joint cartilage and then shed into the joint space. This type of crystal arthritis (termed acute calcium pyrophosphate crystal arthritis or pseudogout) affects the knee and other joints more than the big toe and is most common in people with osteoarthritis.

**See Arthritis Research UK booklet**

*Calcium crystal diseases (pseudogout).*

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**What is the outlook?**

The frequency of attacks is very variable. Some people have an attack only every few years, while others have attacks every few months. In time, though, the frequency of attacks tends to increase and new joints are often affected.

Although the acute attacks of gout are very dramatic, the inflammation subsides relatively 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 the cartilage and bone of joints, 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 tissues down below the saturation point at which crystals form.