

# REFRACTORY GOUT AND YOUR KIDNEYS: WHAT YOU NEED TO KNOW



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## TABLE OF CONTENTS

What are gout and refractory gout? .....4

What are the symptoms? .....5

How does my doctor diagnose gout and refractory gout?.....7

How are gout and chronic kidney disease (CKD) connected? .....8

How are gout and refractory gout treated? .....9

How can I protect my kidneys and lower my risk for gout flares? .....12

Support and Resources. ....15

## STAGES OF KIDNEY DISEASE

Stage	Description	Glomerular Filtration Rate (GFR)*
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above
2	Kidney damage with mild decrease in GFR	60 to 89
3a	Moderate decrease in GFR	45 to 59
3b	Moderate decrease in GFR	30 to 44
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

\*Your GFR number tells your healthcare team how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

## What are gout and refractory gout?

**Gout** is a common disease that happens when the amount of **uric acid**, a normal body waste, is too high in the blood. This happens for one of these reasons:

- The body makes too much uric acid.
- The kidneys can't add enough uric acid to your urine, so it builds up in your blood instead of leaving your body. This is the more common reason.

Uric acid comes from the breakdown of **purines**, which are chemicals found in both our diet and our bodies. In gout, high levels of uric acid in the blood turn into crystals that build up in the joints. These crystals may cause pain and swelling.

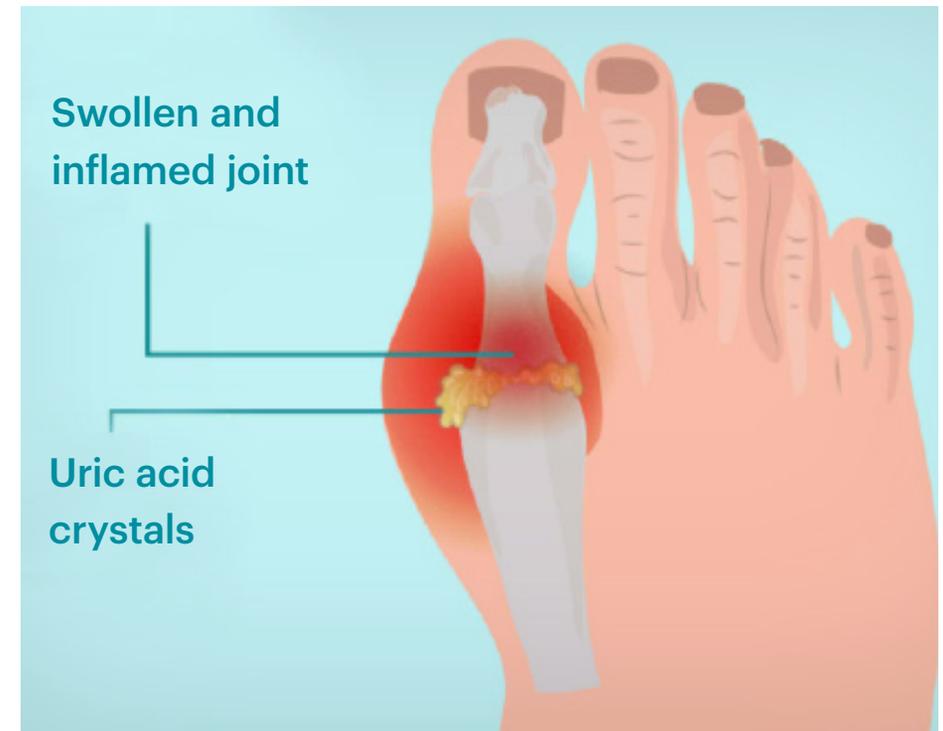
**Refractory gout** is a rare form of severe gout. Both gout and refractory gout are very painful, but refractory gout more often leads to serious problems like permanent joint damage and trouble with moving and walking. Refractory gout may not go away with standard treatments. Other medicines may be needed. People with either gout or refractory gout can also have problems with their kidneys.

## What are the symptoms?

Gout attacks include sudden episodes of extreme pain in one or more joints. Gout usually attacks the joint of the big toe, but it can also attack other joints in the ankles, knees, and hands. Symptoms include:

- Swollen joints
- Skin around the swollen joint that's red or purple
- Severe pain or warmth around the joint
- Stiff joints

*Swollen red joint from build-up of uric acid crystals.*



With refractory gout, uric acid levels remain high with standard treatment and symptoms (including painful and swollen joints) become chronic, which means long-term or permanent. Along with the symptoms listed above, these problems can also happen:

- Chronic arthritis
- Lumps or nodules on the hands, elbows, or other parts of the body. These are caused by hard uric acid deposits under the skin known as tophi, which can be painful and disfiguring.

*Lumps of uric acid are called **tophi**.*



## How does my doctor diagnose gout and refractory gout?

- **Arthrocentesis**, also called synovial fluid aspiration of the joint: A needle is used to take fluid from a joint to see if it has uric acid crystals. This method is the gold standard for diagnosing gout.
- Imaging: Ultrasound, cat (CT) scan, and magnetic resonance imaging (MRI), may also be used for diagnosing gout.
- Physical exam
- Review of medical and family history
- Uric acid level:  
This blood test for uric acid is called **serum uric acid (sUA)** and the normal range depends on your age, gender, and each lab's normal values.
- Refractory gout is diagnosed when gout symptoms are severe and chronic, and standard treatments don't work.



## How are gout and chronic kidney disease (CKD) connected?

Uric acid travels from your blood to your kidneys, where it's added to urine so it can leave the body. But CKD may cause less uric acid to be removed through the urine, which can lead to a greater risk for gout. That's why having gout and high uric acid in your blood may be signs that you have CKD. So, if you have gout, you need to get checked for CKD.

If you already know you have CKD, ask your doctor to test for gout if you have symptoms. Some studies show that gout and high uric acid may directly harm the kidneys. It's very important to treat your gout early to protect your kidneys from more harm.

Uric acid crystals can form kidney stones in some people. These stones are very painful and can hurt the kidneys by 1) blocking the kidneys from removing wastes, which can cause infection, and 2) scarring the kidneys with their sharp edges. Both problems can lead to CKD, and even kidney failure. People with refractory gout are also at higher risk for kidney stones and CKD.



CKD is diagnosed with two simple tests:

- **Estimated Glomerular Filtration Rate (eGFR):** a blood test that checks how well the kidneys are filtering wastes from your blood.
- **Urine Albumin-to-Creatinine Ratio (ACR):** a urine test that shows if protein (albumin) levels are too high, which may mean kidney damage.

## How are gout and refractory gout treated?

Gout can be managed with weight loss, dietary and other lifestyle changes, medicine, and control of other diseases that raise uric acid levels. Most experts recommend that uric acid levels in the blood stay below 6 mg/dL in order to prevent gout attacks. But some people may need to keep their uric acid level below 6 mg/dL.

In refractory gout, uric acid levels may need to stay below 5 mg/dL or less. Other medicine may be needed in addition to, or in place of, the usual drugs for gout.

## Medicine

### *Sudden gout flares*

Non-steroidal inflammatory drugs (**NSAIDs**) like ibuprofen and naproxen are usually avoided in CKD. But in some cases, you may be told to take them for a short period. **Colchicine** is commonly used, but the dose may be lowered for people with CKD. **Cortisone** given as a pill or shot also is sometimes used in CKD. Talk to your doctor about having a prescription on hand at home so you can start treatment as soon as a flare begins.

*Long-term treatment to lower uric acid and to prevent gout flares*

**Allopurinol** is the first-line drug to prevent future gout attacks and to keep the condition from becoming chronic. **Febuxostat** can also be considered if there is an intolerance or lack of effect from allopurinol. When you start long-term therapy, you'll also take one of these medicines for a while to prevent gout flares: colchicine; an NSAID if it's safe for you; or cortisone.

With refractory gout, symptoms and high levels of uric acid (above 6 mg/dL) can continue despite these treatments. Therefore, other medicines, such as **lesinurad** or **probenecid** might be considered for lowering uric acid levels, but they are generally not recommended for people with advanced CKD. **Pegloticase** is a medicine used only for severe and refractory gout that doesn't improve with other treatments. It's given through a vein (IV) and may or may not be given along with other medicines.

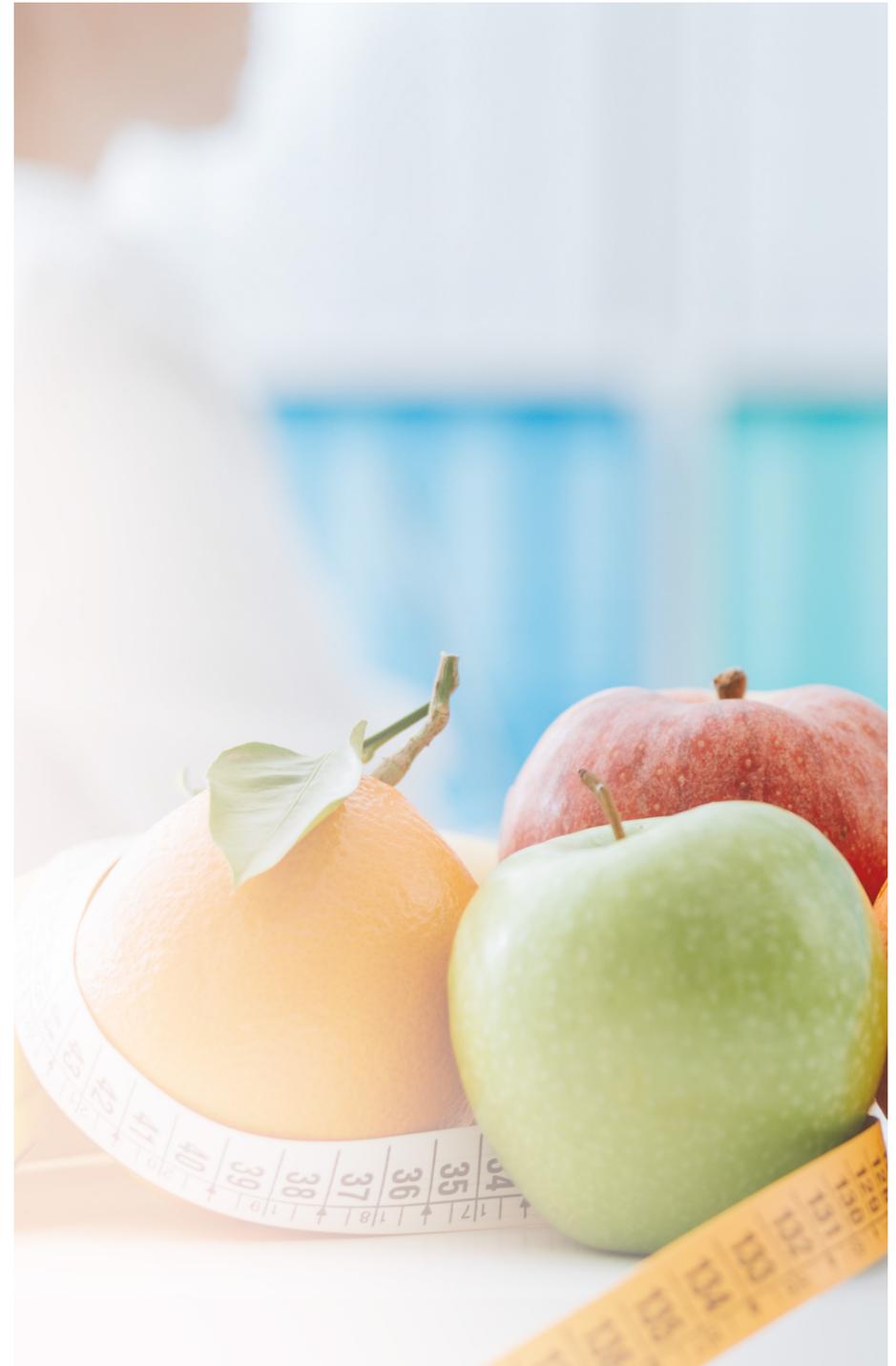
### **Lifestyle changes**

Because uric acid comes from the breakdown of purines, some foods and drinks should be limited or avoided. However, not all foods that are high in purines increase uric acid. Examples of high purine foods and drinks that *do* increase uric acid include organ meats, shellfish, beer, and products with high-fructose corn syrup. Eating less animal protein like meat keeps the urine less acid, which may help lower the risk for gout flares and kidney stones. Eat lots of vegetables and fruits.

- Drink plenty of water, unless your doctor says you need to restrict your fluid intake. Drink water at night too, because crystals tend to form more often during that time.
- Treat health problems like CKD, high blood pressure, high blood sugar, and heart disease, because they may increase uric acid and the risk for gout.
- Review all your medicines and supplements with your healthcare team, as some can increase uric acid. These include aspirin, niacin, and certain blood pressure medicines called diuretics (water pills). Certain anti-rejection medicines that are given after a kidney transplant, (such as tacrolimus) can also raise uric acid levels. Any changes in medicines should be made by a healthcare professional.
- Lose weight if you're overweight. Studies have shown that weight loss can reduce gout flares.
- If you have refractory gout, all the above steps need to be taken to help reduce uric acid levels and symptoms related to gout. If symptoms continue despite treatment, then you should talk to your doctor about your treatment plan, and what other changes to your diet and medicines might need to be made.

## How can I protect my kidneys and lower my risk for gout flares?

- Eat healthy. Be aware of portion sizes and don't skip meals.
- Be more active.
- Control high blood pressure and high blood sugar.
- Lose weight if needed. Extra weight can lead to high blood pressure and diabetes, which can hurt the kidneys.
- Avoid NSAIDs such as ibuprofen and naproxen, which can hurt the kidneys.
- Don't take herbal supplements. Many herbal products can harm the kidneys.
- Don't smoke. Smoking increases the chance of heart and lung disease, and stroke.
- If you need a test such as an MRI with contrast dye, make sure your doctor measures your kidney function first.
- Know your eGFR and UACR test results.



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## DISCLAIMER

*Information contained in this National Kidney Foundation educational resource is based upon current data and expert guidance available at the time of publication. Information is intended to help patients become aware of their disease and its management. This brochure is not intended to set out a preferred standard of care and should not be construed as one. Neither should the information be interpreted as prescribing an exclusive course of management. Patients should always consult with their healthcare providers regarding decisions about their individual plan of care.*

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## Support and Resources

National Kidney Foundation:  
**kidney.org**

National Kidney Foundation patient information:  
**kidney.org/atoz/content/gout**

Call toll-free at **855.NKF.CARES (855.653.2273)** or email  
**nkfcares@kidney.org**

National Institute of Arthritis and Musculoskeletal and  
Skin Diseases: **niams.nih.gov/health-topics/gout**

American College of Rheumatology:  
**rheumatology.org/**

Fueled by passion and urgency, the National Kidney Foundation is a lifeline for all people affected by kidney disease. As pioneers of scientific research and innovation, NKF focuses on the whole patient through the lens of kidney health. Relentless in our work, we enhance lives through action, education, and accelerating change.



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