



GO FOR SIX WITH  
**GOUT**

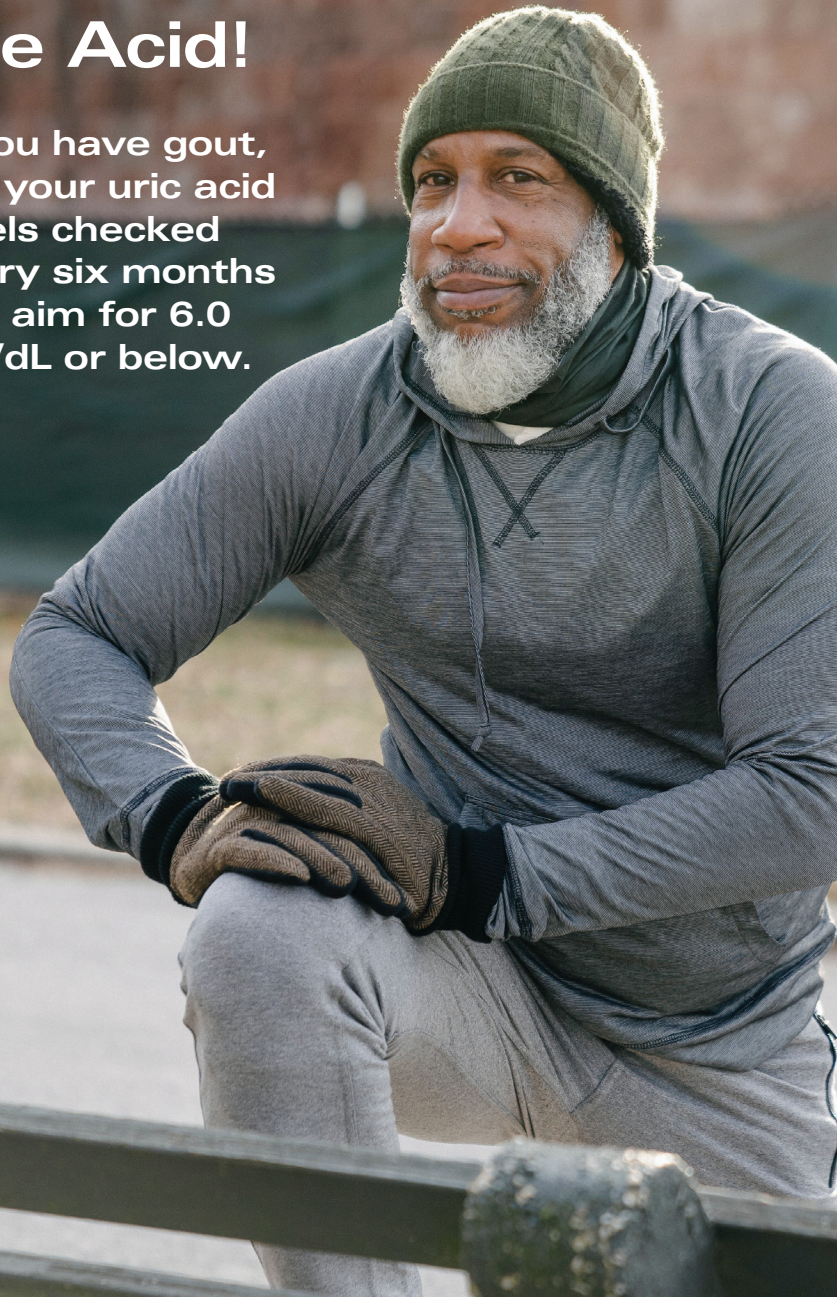
Everything You Need to Know About  
Gout & Uric Acid



Gout Education Society

# Kick Gout in the Acid!

If you have gout,  
get your uric acid  
levels checked  
every six months  
and aim for 6.0  
mg/dL or below.



## Introduction

More than 9.2 million adults in the United States are living with gout today. Gout is one of the most painful forms of arthritis and is the source of disability for many. This brochure is designed to help you understand the disease and how to better control it.

With the help of a physician, many people who suffer from gout are able to prevent future flares and long-term damage. While gout is a lifelong disease, many who are getting the appropriate treatment can maintain a normal lifestyle.

The Gout Education Society, a nonprofit organization, encourages those who have gout to “Kick Gout in the Acid” by getting uric acid levels checked every six months and aiming for a healthy level of 6.0 mg/dL or below.

As with all medical conditions, those with gout should work with their physician to create a treatment plan that’s right for them. For additional resources and the latest information about gout and uric acid, visit our website: [GoutEducation.org](http://GoutEducation.org).

## What Is Gout?

Gout is the most common form of inflammatory arthritis. It is caused by an accumulation of uric acid crystals in the joints. The crystals form when there are abnormally high levels of uric acid in the body.

Gout is one of the oldest known and fastest-growing diseases in the United States. While dietary and lifestyle choices play some role in the development of gout, the major risk comes from genetic factors and metabolic problems such as diabetes, obesity and kidney disease.

A gout flare is characterized by sudden and severe episodes of pain, warmth and swelling in a joint. Gout typically strikes the large joint of the big toe, but may also affect other joints such as the instep, ankle, heel, knee, Achilles tendon, wrist, finger or elbow. When a person has had untreated gout for a long time, more than one joint may be involved and can evolve into a constant and disabling form of arthritis.

## Is Gout Serious?

Yes. If left untreated, gout can lead to permanent joint damage and destruction of tissue. There are other disorders associated with untreated gout, which is why gaining control of the disease early is so important.

Damage of the joints and large tophi (crystals under the skin) can lead to deformities—particularly of the hands and feet—and can even lead to loss of normal use.



## Why the Big Toe?

Half of first-time acute flares strike the big toe. Nine out of 10 people with gout will suffer gout of the big toe at some point in their life. Some believe that the big toe is most vulnerable because of the pressure it receives from walking. Others believe that uric acid crystals form more readily at cooler temperatures, and that the big toe is cooler than any other joint in the body.

Men and women can experience gout symptoms differently. In men, the pain is usually in the lower extremities, like the big toe, ankle or knee. Women often experience initial pain in the upper extremities like the wrist, fingers or elbow.

## Is Severe Pain Typical?

A gout flare is extremely painful. In fact, almost half of people with gout say they can't imagine *anything* more painful than a flare. Some people report it feels like the affected joint is caught in a mechanical device. On a pain scale of 1 to 10, most gout sufferers rank their pain as a 9 or 10. During a gout flare, most patients cannot move the joint at all.

Findings from surveys conducted by Wakefield Research on behalf of the Gout Education Society suggest that—in addition to the physical pain of gout—the disease also presents a tremendous emotional burden to those who have it. Consider that:

- Nearly half of people say their quality of life is not good because of gout.
- 1 in 4 with gout feels isolated or alone in their struggles.
- 1 in 4 people frequently misses work because of gout.
- More than half of people with gout are embarrassed to have it

## What Is Uric Acid?

Everyone has uric acid in their body. It is naturally present in small amounts. It is a waste product that results from the body's normal process. Cells die and release chemicals called purines, which break down to uric acid. When we eat or drink high purine foods, uric acid levels go up. High uric acid levels are part of what triggers a gout flare.

Normally, uric acid is dissolved in the blood and passes through the kidneys and out into the urine. But when more uric acid is produced than the kidneys can get rid of, high uric acid levels develop. This is known as hyperuricemia. High uric acid may turn into crystals in the joints. When uric acid crystals accumulate in the joints, they can make for a painful flare of gout.

## What Are the Risk Factors for Gout?

There are a number of risk factors for gout. The more risk factors a person has, the greater chance they have of developing gout.

- **Hyperuricemia** – This is defined as an elevated uric acid level above 7.0 mg/dL. The best range for uric acid is between 3.0 and 6.0 mg/dL.
- **Genetics** – One in four people with gout has a family history of gout, yet less than half of people with the disease know that it can be hereditary.
- **Age** – Gout typically develops in men during their 30s through 50s and in women in their 60s through 70s.
- **Gender** – It affects men more than women. However, once women are post-menopausal, their rates of gout increase almost (but not quite) to the same level as men.
- **Obesity** – Only one in 10 Americans knows that obesity can contribute to an increased risk for gout. Someone with a Body Mass Index (BMI) of 30 or higher is classified as obese. Visit [GoutEducation.org](http://GoutEducation.org) for a link to a BMI calculator.
- **Other health issues** – Gout is associated with other health issues, including high blood pressure, heart disease, diabetes and kidney disease. It's important to receive a prompt diagnosis and ongoing treatment to manage these conditions.
- **Joint injury** – Previously injured joints are more likely to be the sites of gouty flares.
- **Diet** – Many foods can raise the level of uric acid in the blood. Chief among these are beer, beef, pork, shellfish and foods or beverages sweetened with high-fructose corn syrup. In some people with gout, eating these foods can trigger gouty flares.
- **Medications** – Use of certain medications—especially diuretics or water pills and certain anti-rejection medications used in transplant patients—can increase uric acid levels in the blood.

## What Can Trigger a Flare?

- Regular, excessive alcohol intake, especially beer or binge drinking.
- Eating large amounts of purine-rich foods, especially red meat, organ meat and shellfish.
- Crash diets, especially high-protein fad diets.
- Starting a uric acid-lowering treatment medicine (even though it may be the correct long-term therapy).
- Surgery or a sudden, severe illness that puts a person on bedrest for a long time.
- Treatment of tumors with either chemotherapy or radiation therapy.

## What Will Help Decrease the Pain of an Acute Flare?

- Rest the affected joint for 24 hours after the initial flare or until the pain eases.
- Elevate painful joints.
- Apply cold packs wrapped in towels to the affected joints for 20-30 minutes several times per day.
- Relieve painful inflammation by taking one of the medications in the list on Page 9. The sooner medications are taken, the faster relief will come. Untreated gout flares take five to seven days to go away at first. After many years, it may take longer.
- Many of the medicines recommended require a prescription. There are also over-the-counter, non-steroidal anti-inflammatory drugs (NSAIDs), like ibuprofen and naproxen, but they need to be taken in a higher dosage than the recommended OTC doses to work. Those with high blood pressure, heart disease, kidney disease, ulcers, heartburn or who bruise easily should check with a physician or pharmacist before taking high doses of NSAIDs, which has been associated with increased risk of serious cardiovascular (CV) events and gastrointestinal (GI) bleeding.

## Can Gout Flares Be Prevented?

Yes. In addition to making certain lifestyle changes—such as eating a healthy, well-balanced diet, staying hydrated and maintaining a healthy body weight—it's important to understand what triggers flares. Be aware of what medications you should be taking to treat flares, and how these medications should be taken. All gout sufferers should have a “gout flare” plan and keep prescribed medications on hand.

Anti-inflammatory drugs, like NSAIDs or colchicine, are used to prevent gout flares, especially during the first six months after uric acid-lowering therapy (allopurinol or febuxostat) is started. Gout sufferers should talk with their doctor to learn more about their options.

The guidelines and healthy habits outlined on pages 10-13 of this brochure may help to reduce risk of gout flares. However, it is important to keep in mind that regular use of medication is the most proven, effective way to prevent flares and subsequent damage.



## Is Your Diagnosis Clear?

Many gout sufferers are not properly treated because they have not been accurately diagnosed. Your doctor will usually make a diagnosis based on the classic signs of gout—a sudden onset of excruciating pain that escalates rapidly from a joint that otherwise has no symptoms, to one that is severe, very swollen, red and inflamed over a 12-hour period. The pain stays for several days and then wanes. Your doctor will also take family history and your uric acid level into consideration.

A health care professional can make a definitive diagnosis by drawing fluid from the inflamed joint and examining it under a special microscope. Additionally, as technology advances, many health care professionals now believe that MRIs and ultrasounds may detect the presence of tophi in all stages of gout, helping to identify the disease earlier and less invasively.

## Preventing Future Flares

### Treatments that lower uric acid levels

Most experts agree that lowering a person's uric acid level to 6.0 mg/dL or lower is necessary to prevent gout flares and other problems from elevated uric acid.

Ultimately, a treatment plan that includes a combination of urate-lowering therapy (ULT) and lifestyle adjustments can effectively lower uric acid levels to 6.0 mg/dL or below. It may take time, but this course of action is effective for many people with gout.

Virtually all gout sufferers will have difficulty reaching their target uric acid level even if they are on a ULT and making necessary lifestyle changes. In these hard-to-treat cases, the doctor may recommend a combination of ULTs.

Follow up with your physician until you find a treatment that is right for you. Get your uric acid levels checked regularly—at least every six months—and follow the dosage and timing of the drug regimen that your doctor has prescribed. Be sure to mention any over-the-counter products you take, including herbs and vitamins. Also, mention any overall health or other medical conditions you may have, so your doctor can help you improve your quality of life in managing gout.

Below is a list of medications that have been proven to help lower uric acid levels in the treatment of gout. Talk to your doctor to discuss the treatment that is right for you.

**Allopurinol** Taken orally, allopurinol decreases the body's production of uric acid. This medication is the most commonly used urate-lowering drug, and the usual first choice for urate-lowering therapy. It is also recommended for those with a history of kidney stones or tophi. Dose escalation is recommended.

**Examples:** *Lopurin*<sup>®</sup>, *Zyloprim*<sup>®</sup>

**Febuxostat** This medication is taken orally and decreases the body's production of uric acid. It can be taken by people with mild to moderate kidney or liver disease.

**Example:** *Uloric*<sup>®</sup>

**Pegloticase** This is an intravenous infusion of an enzyme given every two weeks and used to dissolve gout crystals

in advanced and difficult-to-control gout. It can rapidly reduce the size of tophi, or crystals, in the joints.

**Example:** *Krystexa*<sup>®</sup>

**Probenecid** Taken orally, this medication increases the kidneys' ability to remove uric acid from the body. It is usually used in combination with either allopurinol or febuxostat and is not recommended if there is a history of kidney stones or renal impairment. **Examples:** *Benemid*<sup>®</sup>, *Probalan*<sup>®</sup>

**Clinical Trials** There are also opportunities to participate in clinical trials. For more information about factors to consider and a list of clinical trials currently enrolling patients, visit [GoutEducation.org](http://GoutEducation.org).

### Medicines that prevent gout flares

Although ULTs can be an important component of gout management, some people experience flares when taking these medicines. This is normal.

To prevent flares, the American College of Rheumatology (ACR) Guideline for the Management of Gout states that gout sufferers should take anti-inflammatory medicine such as colchicine or an NSAID before or during treatment with a ULT.

**Colchicine** Colchicine is one of the most frequently used medicines for preventing the inflammation associated with acute gout. Taken orally, the recommended dosage of colchicine for the prevention of gout flares is 0.6 mg once or twice daily. The maximum dose of colchicine for the prevention of gout flares is 1.2 mg per day. The dose may need to be adjusted if you have kidney disease or if it is used at the same time as some other medications, as it can cause diarrhea. **Examples:** *Colcrys*<sup>®</sup>, *Mitigare*<sup>®</sup>

**Low-dose NSAIDs** Taken orally, NSAIDs reduce the inflammation caused by deposits of uric acid in the body. Dosing for the prevention of gout flares may vary by product and should be determined by the treating physician. It is important to note that the U.S. Food and Drug Administration (FDA) recommends taking the lowest possible NSAID dose for the shortest duration of time to avoid serious CV and GI risks that have been linked with the use of NSAIDs. **Examples:** *Advil*<sup>®</sup>, *Aleve*<sup>®</sup>, *Celebrex*<sup>®</sup>, *Indocin*<sup>®</sup>, *Motrin*<sup>®</sup>, *Naprosyn*<sup>®</sup>

## Relieving Pain and Reducing Swelling in Acute Gout Flares

For a first-time flare, getting to an emergency room or urgent care clinic is best unless a doctor's appointment is readily available. Seeking or beginning treatment when the symptoms first occur will help things go more smoothly and resolve pain faster.

**Colchicine** Taken orally, colchicine may be most effective when taken with the first 12 hours of an acute flare. A common dosing schedule is to take two 0.6 mg (1.2 mg) tablets together at once, followed by a third tablet (0.6 mg) one hour later. On the next day, take one 0.6 mg tablet once or twice a day for one week to 10 days. Occasionally, some people may have side effects such as nausea, vomiting, abdominal cramps or diarrhea. In these cases, other medications may be needed when treating the pain of an acute flare. **Examples:** *Colcrys*<sup>®</sup>, *Mitigare*<sup>®</sup>, *Col-Benemid*<sup>®</sup>

### Glucocorticosteroids (Cortisone)

Taken orally or injected, cortisone quickly suppresses the inflammation of an acute flare. It is particularly useful for those with chronic kidney disease or who may not be able to take colchicine or NSAIDs.

**Examples:** *Deltasone*<sup>®</sup>, *Kenalog-40*, *Medrol*<sup>®</sup>

### Non-steroidal anti-inflammatory drugs (NSAIDs)

Taken orally, NSAIDs reduce the inflammation caused by deposits of uric acid in the body.

**Examples:** *Advil*<sup>®</sup>, *Aleve*<sup>®</sup>, *Celebrex*<sup>®</sup>, *Indocin*<sup>®</sup>, *Motrin*<sup>®</sup>, *Naprosyn*<sup>®</sup>

## GOAL OF ACUTE FLARE TREATMENT

Ease the pain and suffering associated with gout flares as quickly as possible.

The Food and Drug Administration (FDA) recommends taking the lowest possible NSAID dose for the shortest duration of time to avoid serious CV and GI risks that have been linked with the use of NSAIDs. Based on existing health issues that could put you at higher risk for complications, you and your doctor can determine a low-dose pain medication that is right for you.



## Is There a Gout Diet?

Diet does play a role in the management of gout. Those who have gout should stay hydrated and maintain a healthy, balanced diet. Diets such as the DASH diet and Mediterranean diet have been recommended.

The role that diet plays in gout management, however, is often overstressed. In fact, one in three gout sufferers incorrectly believes that flares can be completely avoided by eliminating certain foods.

In addition to maintaining a healthy diet and body weight, those with gout should also talk to their doctor and take appropriate steps to lower their uric acid levels to 6.0 mg/dL or below.



## High-Purine Foods

High-purine foods can trigger gout flares. Since uric acid is formed from the breakdown of purines, reducing purine content in the diet can help to lower the risk of flares. We encourage gout sufferers to avoid regular or excessive consumption of the following:

- Beer and grain liquors
- Red meat, lamb and pork
- Organ meats, such as liver and kidneys
- Seafood, especially shellfish, like shrimp, lobster, mussels, anchovies and sardines

Research has demonstrated that purines from meat and fish can increase the risk of gout, while purines from vegetables fail to change the risk. Low-fat dairy foods—which can contain purines—actually appear to lower the risk of gout. The bottom line is that all purine-containing foods are not the same, and that plant purines are far safer than meat and fish purines in terms of gout risk.

Low-purine foods for a balanced diet include:

- Low-fat or non-fat dairy products
- Fresh fruit and vegetables
- Nuts and grains



## High-Fructose Foods to Limit

Fructose is a naturally occurring simple sugar found in fruit, vegetables and honey. It has become an additive in many foods and drinks. There is a correlation between a diet high in fructose content and gout. In the typical American diet, high-fructose corn syrup is added to many foods.

The Gout Education Society recommends limiting any products with high-fructose corn syrup, as well as limiting table sugar and table salt:

- Soft drinks and juices
- Cereals, store-bought baked goods, ice cream and candy
- Processed foods at fast food restaurants



## Potential Benefits of the DASH Diet

A diet rich in whole grains, fruits, vegetables and low-fat dairy products—eaten in conjunction with a diet low in red meat, sweets and saturated fats—can significantly reduce uric acid levels, according to a 2016 study by Dr. Hyon Choi, et al, published in *Arthritis & Rheumatology*. The results of the study suggest that the DASH (Dietary Approaches to Stop Hypertension) diet, best known for its important role in heart health, may significantly reduce uric acid levels. Unlike other diets, the DASH diet is low in purines and high in vitamin C and low-fat dairy, both of which have been proven to lower uric acid levels. Researchers found that the diet helped to lower overall uric acid levels by 0.35 mg/dL. For gout sufferers with higher starting levels of uric acid—greater than 7.0 mg/dL—uric acid concentrations dropped by as much 1.3 mg/dL.

## What Lifestyle Changes Should I Make?

### Know your uric acid level—and “Go for Six”

Knowing your uric acid level is as important as knowing your other healthy benchmark numbers—like cholesterol, blood pressure and heart rate. The Gout Education Society recommends people with gout aim for a healthy uric acid level of 6.0 mg/dL or below. Your doctor will determine the level that is right for you. It's also important to check your uric acid levels every six months to ensure target levels are being met.

### Exercise regularly

Adults should engage in moderate-intensity physical activities for at least 30 minutes most days of the week, according to the Centers for Disease Control and Prevention. This includes activities such as walking briskly or swimming laps, mowing the lawn, dancing, swimming or bicycling on level terrain. Increasing the intensity or the amount of time you are physically active can have even greater health benefits and may be needed to prevent weight gain. Develop an appropriate exercise program that is tailored to your body, lifestyle and needs. Always check with your physician before starting any new or vigorous exercise program.

### Maintain a healthy body weight

An obese person is three times more likely to develop gout than someone with a normal body weight. Avoid crash diets, since fast or extreme weight loss can increase the amount of uric acid in the body.

High-protein diets that contain high-purine foods may also be a problem for people with gout.

### Stay hydrated

Many dietitians recommend consuming at least 64 ounces of water daily and more if you are exercising. Water helps the body transport nutrients and waste, regulates body temperature and cushions joints and tissues. Research also suggests that drinking adequate water might guard against kidney stones and constipation. Avoid sports drinks sweetened with high-fructose corn syrup.

### Take vitamins

The risk of gout appears to be lower in men taking daily vitamins. Vitamin C may be a useful supplement in the 500 to 1,000 mg per day range.



## Are Other Health Problems Linked With Gout?

Yes. If left untreated, gout can lead to permanent joint damage and destruction of tissue. There are other disorders associated with untreated gout, which is why gaining control of the disease early is important.

Extensive destruction of joints and large tophi (deposits of urate crystals that settle under the skin in the joints and tendons) can lead to **deformities**, particularly in the hands and feet, and to loss of normal use.

**Kidney stones**, which can also be extremely painful, are often composed of uric acid. They may block the urinary tract and, if left untreated, can result in infection and kidney damage. About one out of five gout sufferers will develop kidney stones. Hyperuricemia and gout can be associated with **decreased kidney function**.

**Obesity** is a condition that exists when someone carries excess body fat that is severely out of proportion for their height. An obese person is three times more likely to develop gout compared to someone with a normal body weight. The Centers for Disease Control and Prevention offers a free BMI (Body Mass Index) Calculator to help you determine if you are at a healthy weight or are at risk for obesity. Talk to your doctor if you have any concerns about your weight or BMI.

**Diabetes** is a disease in which blood glucose (sugar) levels are above normal due to either a lack of insulin in the blood or resistance to the insulin. Some research suggests that insulin resistance may even play a role in the development of gout and that hyperuricemia may worsen insulin resistance. The recommended modifications to ensure a healthy diet and appropriate activity level for managing gout are generally good for preventing or treating diabetes.

**Heart problems**, including high blood pressure, blocked arteries and heart failure, are associated with gout. Hyperuricemia alone is associated with a higher risk of death and complications from these conditions. Research from the University of Oxford has shown that having gout doubles a person's risk for **heart attack and stroke**. Additional research published in the *Annals of the Rheumatic Diseases* has shown that women with gout are 3.5 times as likely to have a heart attack as men.



## How Can I Make the Most out of a Visit With My Physician?

**Be ready to answer the following questions:**

1. What joints are affected?
2. When did you first notice the pain?
3. Did the pain come on suddenly or gradually?
4. What was the pain like?
5. Were you able to use the painful joint at all during the flare?
6. Was the area hot, red or swollen?
7. Have you had similar episodes in the past? If so, how long did they last?
8. Did you experience other symptoms, such as fever, general achiness or a loss of appetite at the time you noticed the pain?
9. Have you noticed any lumps under your skin, especially on the ridge of the outer ear, the fingers, elbows, toes or around the Achilles tendon (connects the heel bone to the lower leg)?
10. Have you ever had kidney stones?
11. Does anyone in your family have gout or kidney stones?



**You may want to ask your physician the following questions:**

1. Will any of the current medications I am taking increase my risk for hyperuricemia?
2. How does medication work to help my gout?
3. How and when should I take my medication?
4. Could gout medication interact with other medications I am taking?
5. What should I do if I miss a dose?
6. What is the lowest NSAID dose I can take to relieve the pain and/or swelling?
7. What should I do if my symptoms are not relieved while taking gout medication?





Gout Education Society

The Gout Education Society is a nonprofit group of health care professionals whose mission is to educate the public and health care community about gout and the related health care consequences of hyperuricemia, with the aim of improving the quality of care and minimizing the burden of gout. To learn more and access complimentary resources, visit [GoutEducation.org](https://GoutEducation.org).



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