



For Kidney Stone Warriors

Preface

Inspired by our community of *Kidney Stone Warriors*, this *Survivor's Guide* is a curation of facts and tips for managing kidney stones.

Proudly brought to you by *Worst Pain Ever*, the world's largest kidney stone patient community and powered by Dornier MedTech, a company that engineers urological solutions.

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Kidney Stone Prevention 101

KNOWLEDGE (OF YOUR STONE TYPE) IS POWER

What are kidney stones?

Kidney stones form when minerals in your urine, such as calcium, oxalate and urate, crystalize together. There are a few different kinds of stones, but the three most common types are calcium oxalate, uric acid and struvite stones¹.

Why should you know what kind of stones you have?

The type of kidney stones you form depends on different factors. For example, calcium oxalate stones can be caused by numerous factors, such as dehydration and/or high salt intake². On the other hand, struvite stones are typically caused by upper urinary tract infections (UTIs)³.

Learning about your stone type can help you and your urologist figure out which part of your lifestyle is causing them, and how to best prevent them from occurring again.



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HOW CAN YOU FIND OUT WHAT'S CAUSING YOUR STONES?

Whether it's your first or tenth stone, your urologist may recommend you undergo a few tests to discover the causes of your kidney stones. The results will help guide their diagnosis and determine a suitable treatment plan for you. Some tests include:



Stone Analysis

This is a chemical analysis conducted on a kidney stone that you have passed in your urine or had removed during surgery⁴. Don't worry – if you are asked to collect the stone at home, you may be given a kidney stone strainer, or you can get one from the drugstore.



Blood Tests

You may be sent for blood tests to evaluate your kidney health. The results can show if you have too much calcium or uric acid in your blood, which is especially helpful for calcium oxalate and uric acid stone formers⁵.



24-hour urine test

You will be instructed to collect your urine over 24 hours. It will then be analyzed in a lab to figure out its composition. This may include the amount of calcium, oxalate, citrate and uric acid present, and even the pH level⁶!

Already went for your 24-hour urine collection but not sure how to read your results? Answer a few quick questions with our 24-Hour Urine Test webtool to receive a personalized report on what they mean for you and your lifestyle!

Take the test now!

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NOT ALL STONES ARE CREATED EQUAL – COMMON CAUSES OF KIDNEY STONES

Depending on your stone type, there are several possible causes of kidney stones. Some of these include:

Diet

Consuming certain foods in excess can encourage the formation of kidney stones.

For example, a diet with too much animal protein (e.g. red meat and seafood), can increase the levels of uric acid in your urine, encouraging the formation of both calcium oxalate and uric acid stones⁹.



Pre-existing conditions

People with certain medical conditions are at greater risk of developing kidney stones.

For example, Type 2 diabetes¹⁰ and/or gout¹¹ can cause uric acid stones, while hyperparathyroidism¹² can raise the concentration of calcium in your body and cause calcium stones.



Dehydration

When you don't drink enough water or are subjected to hot weather conditions⁷, the concentration of minerals in your kidneys increases. This can cause certain minerals to combine and harden, forming a kidney stone¹.

No matter your stone type, try to drink at least 2.5-3L (a.k.a eight to ten 10-ounce glasses) of water a day!⁸



Genetics

If you've been forming kidney stones since you were a child, it could be a sign that they're caused by a genetic condition. Cystinuria is one such genetic condition¹³ that can result in excessive production of minerals in the kidney, leading to recurring kidney stones. If you suspect your stones are a result of such conditions, speak to your doctor. Early diagnosis can help to slow down or prevent further long-term complications¹³!



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PREVENTION IS BETTER THAN CURE

Staying hydrated is key to preventing kidney stones, but it may not always be sufficient. Here are some changes you may want to consider introducing into your diet:



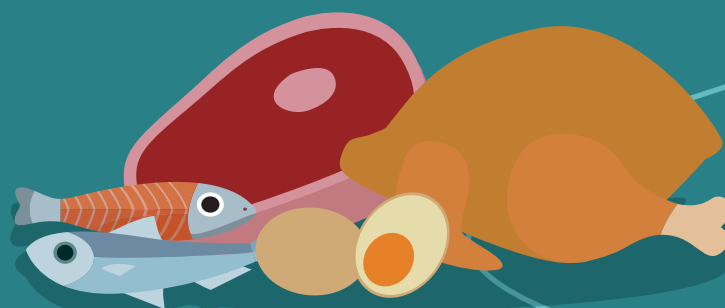
Moderating salt intake

Multiple studies have shown that a high-sodium diet can lead to increased calcium excretion in the urine¹⁴, which causes kidney stones.

Slash the salt intake wherever you can or substitute it with other spices. Even small actions like requesting for unsalted fries when eating out can make a big difference to your kidneys and overall health!

Limit animal protein intake

Too much animal protein increases uric acid and reduces levels of urinary citrate¹⁶, the main culprits of uric acid and calcium oxalate stones respectively. You don't have to cut out meat completely – 80 grams of protein daily¹⁵ should do it!



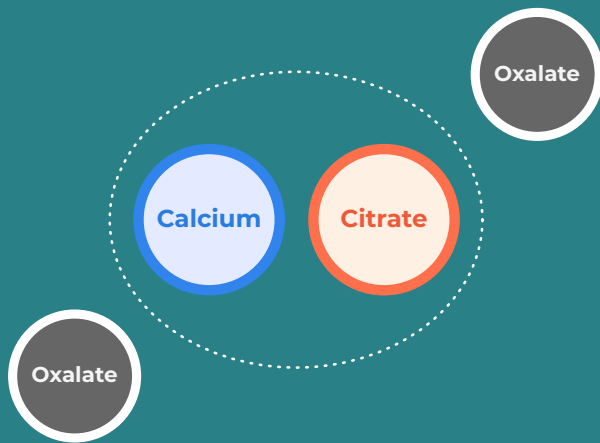
Maintaining a healthy calcium intake

Contrary to popular belief, omitting dairy entirely may actually lead to a calcium deficiency, which reduces bone strength and other bodily dysfunctions¹⁷.

Eating foods that contain calcium and oxalate in the same meal¹⁸ can help the two minerals bind together. This reduces the amount of free oxalate excreted in your urine and lowers your chance of forming calcium oxalate stones²! For example, if you want to snack on nuts, try mixing them with a bit of yogurt. Simple, delicious, and balanced!



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Raising your citrate levels

Citrate helps to bind calcium and prevent it from binding other minerals in the urine, such as oxalate¹⁹, which is particularly helpful for calcium oxalate stone formers.

Citrate is present in most citrus fruits in its acidic form, but is more effective in its alkali form²⁰ (a.k.a alkali citrate). If your urine citrate is too low, your urologist may typically recommend potassium citrate, or calcium citrate therapy. With new market innovations, you can now get your daily dose of alkali citrate from supplemental beverages!

Be wary of certain diets!

Many diet lifestyles require you to cut out or substitute animal products (e.g. meat and eggs), which can be detrimental to you as a kidney stone former. For example, vegan and keto diets can cause nutritional deficiencies. This can increase your risk of hyperuricemia (i.e. too much uric acid in your blood)²¹, which is dangerous for uric acid stone formers!



Stop stones before they start!

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Clinically proven ingredients*
to prevent kidney stones.
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*30 mEq alkali citrate and 25 mEq citric acid per serving.

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WHEN THE GOING GETS TOUGH, THE TOUGH GET GOING – TO THE ER, THAT IS.

Kidney stone pain is no joke. However, not all cases require a visit to the hospital. The emergency room can get packed, especially during the holidays.

Here's a simple guide to know when you should go to the ER or visit a doctor in the next few days.

When to go to the ER for Kidney Stones



Fever > 101.5 °F



UTI



Difficulty
passing urine



Intense pain in the back
and lower abdomen that
doesn't subside with medication



Persistent nausea
and vomiting

When **not** to go to the ER

Seek medical attention from your primary care physician or urologist within the next few days



Fever < 101.5 °F



Urinating
normally



Feeling discomfort
but tolerable



Pain fluctuates
in intensity



Bloody, cloudy or
foul-smelling urine

A blocked or infected kidney stone will warrant a trip to the ER¹⁹. To know if your pain is due to an infection, look out for the symptoms above!

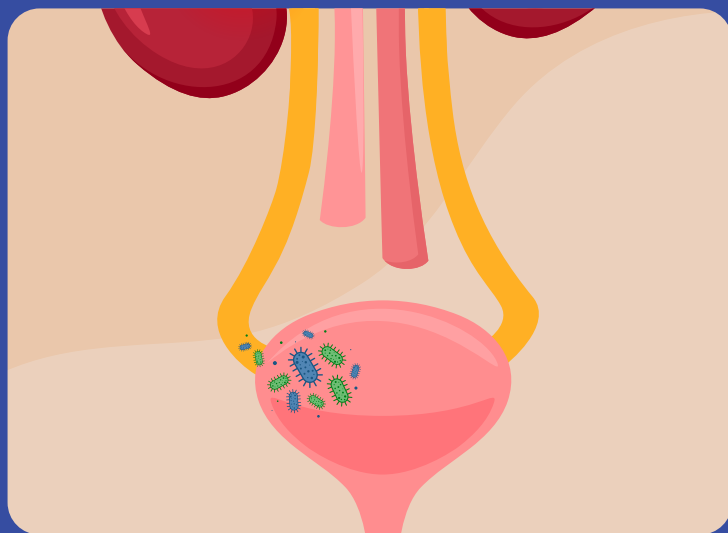
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Dr. Eisner Explains – Post-treatment Infections

Thanks to advances in medical technology, kidney stone surgery has evolved by leaps and bounds! Today, doctors can remove your kidney stone with small or no incisions, minor pain and minimal downtime.

However, anytime a procedure or piece of equipment is introduced into the body, a post-treatment infection can occur. Dr. Eisner, MD, from Massachusetts General Hospital, explains all about them and how we can manage them effectively.

WHAT CAUSES POST-TREATMENT INFECTIONS?



“

Most post-treatment infections become bladder infections, which are minor and can be treated with oral antibiotics.

”

“Patients who go through treatments such as ureteroscopy (URS) and percutaneous nephrolithotomy (PCNL) are more at risk of getting post-treatment infections due to the more invasive nature of these procedures.

Additionally, when we break up a kidney stone, we can sometimes liberate the bacteria inside the stone. Usually, infections contracted after kidney stone treatments become bladder infections, which are minor and can be treated with oral antibiotics.”

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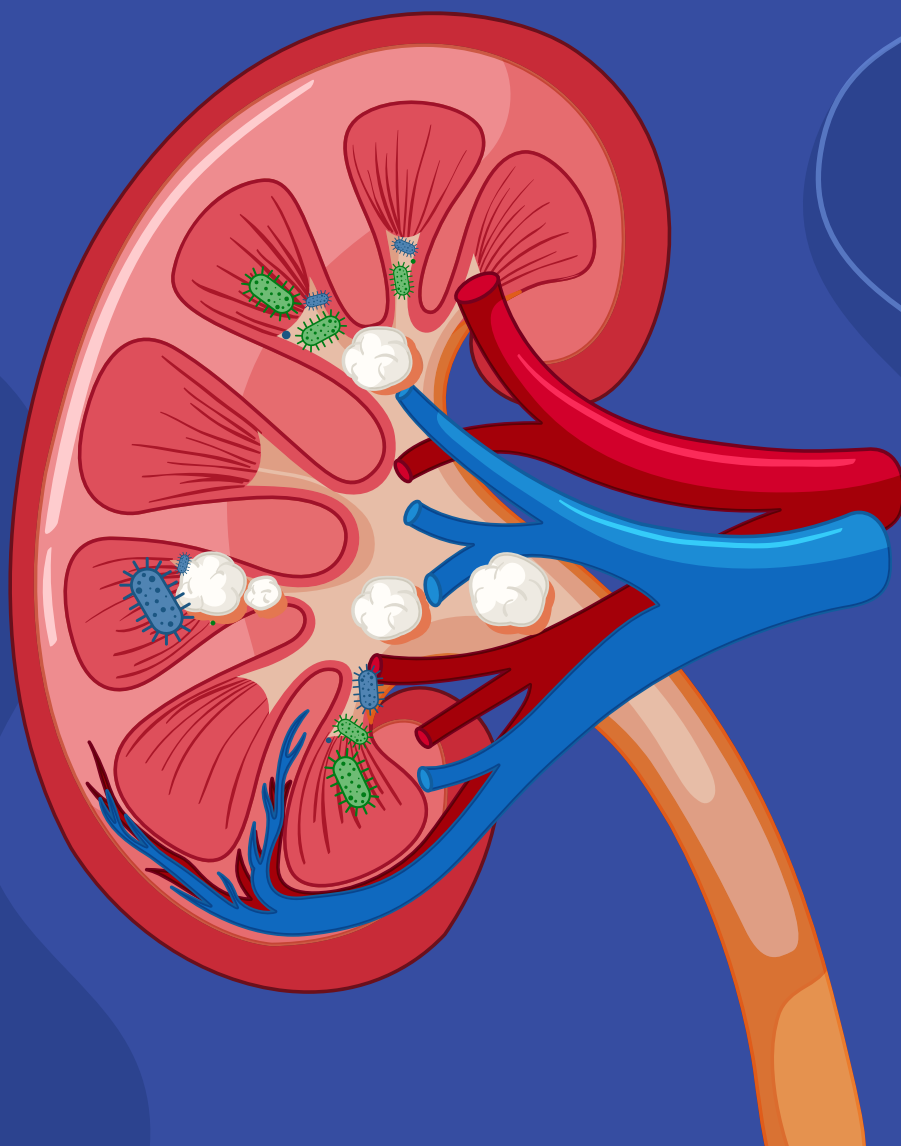
DOES THIS MEAN I'M LIKELY TO GET AN INFECTION ANY TIME I UNDERGO KIDNEY STONE TREATMENT?

“Not necessarily! There are two types of kidney stone patients, and it would depend on which one you are.

The first type of patient does not have a history of urinary tract infections. Their risk of infection after treatment usually ranges from 3-5%. They are fairly easy to treat with a single dose of antibiotics in the operating room, which has been shown to be sufficient and safe.

The second type is patients who have a history of chronic recurrent infections. They tend to have bacteria colonizing their stones, which “hides” in pockets of the stone that are difficult to reach.

While oral antibiotics may sterilize the urine, it can be harder to sterilize a kidney stone. For these types of patients, we usually treat them both pre- and post-operatively with antibiotics for several days.”



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HOW CAN I TELL WHEN I GET A POST-TREATMENT INFECTION, AND WHAT HAPPENS THEN?

“If you’re feeling unwell, take your temperature. If you’re feverish, call us right away. A fever after surgery is usually a sign of a urinary tract infection, and should be treated with the appropriate antibiotics.

For patients who have never had an infection after a kidney stone treatment before, we often give a prescription for oral antibiotics. For patients who have had multiple infections in the past and may be at risk of more serious infections, we may change their antibiotic regimen, or even bring them in for intravenous antibiotics.”



“

If you’re feeling feverish, call us right away!

”

WHAT CAN I DO TO LOWER MY CHANCES OF GETTING AN INFECTION AFTER A KIDNEY STONE TREATMENT?



“For patients with a history of infection before surgery, we can pre-treat them to mitigate the risk of getting an infection. After your procedure, stay hydrated to keep the urine flowing and clear up some of the bloody urine from the procedure.

Us urologists also do our best to ensure that we follow up with discharged patients and if they are feeling ill, that they come back to the hospital for further evaluation.

My top tip for preventing post-treatment infections is to stay hydrated! Aim for a urine volume of about two and a half liters. Kidney stones are formed from the crystallization of minerals in the urine – the more diluted the urine is, the fewer stones you make.”

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Got more burning questions?

Check out our [website](#) for medically-reviewed articles, expert interviews and helpful webtools.

Feel like you're battling the worst pain ever alone?
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For partnerships or feedback, write to us at
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