

From Prevention to Treatment

# Kidney Health in

# Type 1 Diabetes

🧡 Children with Diabetes®

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## From Prevention to Treatment: Kidney Health in Type 1 Diabetes

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Although some of us living with type 1 diabetes are fortunate to avoid some of the major complications that diabetes can cause, many people with diabetes experience complications in their lifetime. According to a 2023 article in *The Lancet*, 30-40% of people living with type 1 diabetes will end up with chronic kidney disease (CKD)<sup>1</sup>. This should be cause for alarm because these rates have not decreased significantly since the 1980s despite all the advances in diabetes care. Here is a summary of the latest scientific research on kidney health related to type 1 diabetes.

### Kidney Basics

There are two kidneys in the body; their main jobs are filtering blood from waste and regulating fluid levels<sup>2</sup>. The kidneys turn waste into urine to get it out of the body while sending the nutrients to the bloodstream. They also help regulate levels of electrolytes and blood pressure and assist in red blood cell production.

### Prevention: Keeping Kidneys Healthy

There are two main goals when it comes to keeping your kidneys healthy when you live with diabetes:

1. Glucose Targets: Achieving the targets for glucose levels set by the [American Diabetes Association](#) or working towards those targets (HbA1c <7%, Time in Range 70%).
2. Blood Pressure Targets: Keeping blood pressure at healthy levels (less than 130/80 mmHg) is also very important for keeping your kidneys healthy. Ensure you check your blood pressure at every healthcare appointment and at least twice a year.

This means that if your blood pressure is higher than the target of 130/80, you likely need to work on lifestyle modifications and possibly take medications to help lower it to protect your kidneys. Adding activity and healthy eating into your life can also make getting glucose levels to target easier.

### Monitoring Kidney Function

In addition to monitoring glucose levels and blood pressure, people with diabetes should have their urine microalbumin measured at least annually. Microalbumin is a small protein, and when too much is in the urine, it indicates kidney damage<sup>3</sup>. The other two everyday things measured are creatinine and glomerular filtration rate (GFR). Creatinine is a waste product that should be removed, and GFR is how quickly the kidneys filter out waste. Microalbumin is measured in urine, and creatinine and GFR are measured in blood. Typically, the changes in microalbumin are identified before the GFR is affected.

Normal Microalbumin	<30 mg/g creatinine
Moderately Elevated Microalbuminuria	30-300 mg/g creatinine
Severely Elevated Microalbuminuria	>300 mg/g creatinine

## Chronic Kidney Disease

If the kidney has been damaged permanently (as opposed to an [acute kidney injury](#)), it would be considered Chronic Kidney Disease (CKD). Kidney damage due to high glucose levels would also fall into this category. Based on the progression, kidney disease is staged from G1 to G5, where G1 is the least damaged, and G5 is complete kidney failure. Unfortunately, once the kidney is damaged, there is no way to reverse it; you can only work to prevent further damage from happening.

## Treating Kidney Disease

Treatment of CKD typically involves several things, including:

- Restricting sodium intake to <2,300 mg/day
- Reducing protein intake to 0.8g/kg per day
- Medication treatment with an [ACE Inhibitor](#) or ARB to lower the risk of disease progression

For people with type 2 diabetes, medications to lower glucose levels and protect the kidneys are currently recommended. These medications are [SGLT2 Inhibitors](#) and [GLP-1 Agonists](#). They are still being studied in people with type 1 diabetes for safety purposes, so hopefully, we will soon know if they're effective and helpful for people with T1D.

## Important Takeaways

First and foremost, sometimes complications happen, no matter how hard we try to prevent them. This doesn't mean that we shouldn't try, of course, but be sure to go easy on yourself if they happen despite your efforts. Second, like diabetes management, kidney disease management is not cut and dry but more nuanced. Last, let's hope that more research continues to help reduce the risks associated with CKD and help people with diabetes stay healthy.

## Resources

1. [People with type 1 diabetes and chronic kidney disease urgently need new therapies: a call for action](#)
2. [Your Kidneys & How They Work \(NIDDK\)](#)
3. [What to Know About a Microalbuminuria Test](#)
4. [Chronic Kidney Disease and Risk Management: Standards of Care in Diabetes—2024](#)