CONDITION

Nephropathy diabetic

Diabetic nephropathy is long-term kidney damage linked to diabetes.

WHAT IT IS
Kidney filter damage linked to diabetes

BODY SYSTEM
Kidneys and urinary system

MAIN SYMPTOMS
Often none early, ankle swelling, fatigue, foamy urine

WHAT CAUSES IT
Long-term diabetes-related damage to kidney filters

HOW IT IS DIAGNOSED
Repeated urine albumin and blood kidney-function tests

MAIN TREATMENT
Diabetes, blood pressure, and kidney-protective treatment

CAN IT BE CURED?
No - progression can often be slowed

IS IT AN EMERGENCY?
Sometimes - severe breathlessness or confusion

LONG-TERM OUTLOOK
Often manageable, but some people develop kidney failure

Overview

Diabetic nephropathy means kidney damage associated with diabetes. It is often called diabetic kidney disease.

Your kidneys contain tiny filters that remove waste and extra water from the blood. Over time, high blood glucose and high blood pressure can damage these filters. Protein called albumin may then leak into the urine, and the kidneys may become less effective at cleaning the blood.

This condition can affect people with type 1 or type 2 diabetes. It usually develops gradually over years. Early kidney damage often causes no symptoms, so urine and blood tests are important even when you feel well.

Not every kidney problem in someone with diabetes is diabetic nephropathy. Infections, medicines, blocked urine flow, inherited conditions, and other kidney disorders can cause

similar test results. Your healthcare team will consider the full pattern before deciding on the likely cause.

Treatment cannot usually remove established kidney scarring. However, controlling diabetes and blood pressure, using suitable kidney-protective medicines, and avoiding further kidney injury can slow or sometimes stabilize the condition. This also lowers the risk of heart attack and stroke, which is higher when diabetes and kidney damage occur together.

Symptoms

Most people have no symptoms during the early stages. Kidney damage may first be found during routine diabetes checks.

As kidney function declines, possible symptoms include:

These symptoms are not specific to diabetic nephropathy. For example, swollen ankles can have heart, vein, liver, or medicine-related causes. Foamy urine can also occur temporarily and does not always mean that protein is present.

A sudden major change is less typical of diabetic nephropathy, which usually progresses slowly. Rapid swelling, a sharp fall in urine output, or suddenly worsening kidney test results may point to an additional problem that needs prompt assessment.

- Swelling around the ankles, feet, legs, hands, or eyes
- Foamy or frothy urine caused by protein
- Tiredness, weakness, or difficulty concentrating
- Shortness of breath, especially if fluid builds up
- Reduced appetite, nausea, or an unusual taste
- Itching, muscle cramps, or restless legs
- Needing to urinate more often at night

Causes and risk factors

Diabetes can expose the kidney's filters and blood vessels to high glucose levels over a long period. This can alter the filters, increase pressure inside them, and eventually cause scarring.

High blood pressure adds further strain. Kidney damage can also raise blood pressure, creating a cycle in which each condition makes the other harder to control.

Factors associated with a higher risk include:

Risk is not the same as certainty. Some people develop kidney damage despite careful diabetes management, while others do not develop it after many years. Inherited traits and other factors that are not fully understood may contribute.

- Having diabetes for many years
- Glucose levels that are frequently above your agreed target
- High blood pressure
- Smoking
- Heart or blood vessel disease
- A family history of kidney disease
- Previous episodes of sudden kidney injury

Diagnosis

Two main tests are used to identify and monitor diabetic kidney damage.

A urine albumin-to-creatinine ratio, often shortened to UACR or ACR, measures albumin in a urine sample. Albumin is a blood protein that healthy kidney filters usually retain. A raised result suggests that the filters are leaking.

A blood creatinine test is used to estimate the glomerular filtration rate, or eGFR. This estimates how well your kidneys are filtering. It is not a direct percentage of kidney function, but it helps show the stage and trend of kidney impairment.

One abnormal result does not always confirm chronic kidney damage. Albumin can rise temporarily because of strenuous exercise, fever, infection, menstruation, very high blood glucose, or poorly controlled blood pressure. Tests are commonly repeated to check whether the change persists. Chronic kidney disease means that abnormal kidney structure or function has been present for at least three months.

Your assessment may also include blood pressure checks, a urine test for blood or infection, and blood tests for potassium and other salts. Eye changes caused by diabetes may support the diagnosis, although kidney and eye complications do not always occur together.

An ultrasound may be used if another kidney or urinary problem is possible. A kidney biopsy, which removes a tiny tissue sample, is not routinely needed. It may be considered when the pattern is unusual, such as a rapid loss of kidney function, substantial blood in the urine, or uncertainty about the cause.

Treatment and management

Treatment aims to preserve kidney function, reduce protein leakage, and lower cardiovascular risk. The best combination depends on your type of diabetes, kidney function, urine albumin level, blood pressure, other conditions, and current medicines.

Keeping blood glucose within a target agreed with your healthcare team reduces further injury. Targets need to be realistic and safe. As kidney function declines, some diabetes medicines may need adjustment because the kidneys help remove them from the body. The risk of low blood glucose can also increase.

Blood pressure control is a major part of treatment. Medicines called ACE inhibitors or angiotensin receptor blockers are often used when diabetes, high blood pressure, and urine albumin occur together. They lower pressure inside the kidney filters as well as lowering blood pressure. Kidney function and potassium are checked after starting or changing these medicines.

SGLT2 inhibitors may protect the kidneys and heart in many people with type 2 diabetes and chronic kidney disease. Their benefits are not limited to glucose lowering. Other options for selected people may include a non-steroidal mineralocorticoid receptor antagonist or a GLP-1 receptor agonist. These treatments are not suitable for everyone and require individual review and monitoring.

Management may also include:

Do not stop prescribed medicine because of a kidney test without advice. During vomiting, diarrhoea, fever, or poor fluid intake, ask for guidance about whether any medicines should be paused temporarily.

Advanced kidney failure may require dialysis or a kidney transplant. Dialysis removes waste and excess fluid from the blood. Transplantation replaces kidney function with a donated kidney. These treatments are considered through planned specialist care, usually well before they become necessary.

- Stopping smoking
- Reducing excess salt, especially when blood pressure or swelling is present
- Regular activity suited to your health and mobility
- Treatment to reduce cholesterol and cardiovascular risk
- Reviewing medicines that may accumulate as kidney function declines
- Avoiding dehydration and unnecessary kidney-stressing medicines

Complications

Diabetic nephropathy can lead to increasing protein loss and a gradual decline in kidney filtration. If kidney function becomes severely reduced, waste products and fluid can build up in the body.

Possible complications include:

Complications are more likely as kidney function falls, but they are not inevitable. Blood and urine monitoring can identify many changes before they cause symptoms.

- High blood pressure and fluid retention
- High potassium, which can affect heart rhythm
- Anaemia, meaning too few oxygen-carrying red blood cells
- Changes in bone and mineral balance
- Increased risk of infection and poor healing
- Heart attack, stroke, and heart failure
- Kidney failure requiring dialysis or transplantation

Prevention

Diabetic nephropathy cannot always be prevented. Genetics, the length of time you have had diabetes, and other factors outside your control may contribute.

You can lower the chance of developing it or slow early damage by managing glucose and blood pressure, not smoking, attending routine kidney checks, and taking prescribed kidney-protective treatment when appropriate.

Avoid frequent use of non-steroidal anti-inflammatory drugs like ibuprofen or naproxen , or NSAIDs, unless a healthcare professional has said they are suitable. Examples include ibuprofen and naproxen. These medicines can reduce blood flow to the kidneys, especially during dehydration or when kidney function is already reduced.

Tell healthcare professionals that you have diabetes and kidney impairment before starting new prescription, over-the-counter, or herbal products. "Natural" products are not automatically safe for the kidneys.

Living with it and what to expect

Diabetic nephropathy usually changes over months and years rather than days. Some people have stable kidney function for long periods. Others experience a gradual decline, and a smaller group progresses to kidney failure. Your recent trend in eGFR and urine albumin is generally more informative than one isolated result.

Monitoring continues even when you feel well. The frequency of blood, urine, and blood pressure checks is based on the severity of kidney damage, how quickly results are changing, and the treatments you use.

You may be referred to a kidney specialist if kidney function is substantially reduced, falling quickly, difficult to explain, or complicated by problems such as persistent high potassium or hard-to-control blood pressure. Referral does not necessarily mean that dialysis is expected.

Food advice should be practical and individualized. Most people do not need to remove all protein, potassium, or phosphorus from their diet. Unnecessary restrictions can make eating difficult and may lead to poor nutrition. A kidney dietitian can help if your blood tests, swelling, or stage of kidney impairment require specific changes.

Planning can make day-to-day care easier. Keep an up-to-date medicine list, know how to contact your diabetes or kidney team during illness, and attend eye, foot, blood pressure, and cardiovascular checks. Many people continue working, exercising, travelling, and managing family life while receiving regular monitoring.

When to get medical help

Arrange routine follow-up if you notice persistent foamy urine, new mild ankle swelling, increasing tiredness, or blood pressure readings repeatedly above your agreed range. Also seek advice if treatment side effects are making it difficult to take your medicines.

Ask for prompt medical advice if you have vomiting, diarrhoea, fever, or poor fluid intake and are unsure how to manage diabetes or kidney-related medicines. Seek urgent assessment for a sudden reduction in urine, rapidly increasing swelling, repeated vomiting, or a sudden unexplained change in glucose levels.

Call emergency services for severe breathlessness, chest pain, fainting, a seizure, or marked confusion. These symptoms can occur with serious fluid, heart, electrolyte, or glucose problems and should not wait for a routine appointment.

Common questions

Does protein in my urine mean my kidneys are failing?

No. Albumin in the urine can be an early sign of kidney filter damage, often long before kidney failure. Temporary increases also occur. Repeat urine testing and the eGFR trend help show what the result means.

Can diabetic kidney damage be reversed?

Established kidney scarring usually cannot be reversed. Albumin leakage may decrease, and kidney function can remain stable, when glucose, blood pressure, and other risks are managed effectively.

Will I need dialysis?

Most people with early diabetic nephropathy do not need dialysis. The chance is higher when eGFR is already low or falling quickly, or when urine albumin is very high. Your test trend helps estimate the risk.

What should I eat?

A balanced eating pattern with less excess salt is often helpful. Do not start a very low-protein diet or remove potassium-rich foods unless advised based on your kidney stage and blood tests.

Can I take ibuprofen for pain?

Ibuprofen and similar NSAIDs can worsen kidney function in some situations. Ask a pharmacist or healthcare professional about safer options, particularly if you have reduced kidney function, heart failure, swelling, or dehydration.

Is diabetic nephropathy the same as chronic kidney disease?

Diabetic nephropathy is one cause of chronic kidney disease. Chronic kidney disease is the broader term for kidney abnormalities lasting at least three months, whatever their cause.

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