CONDITION

End-stage kidney disease

End-stage kidney disease is permanent loss of kidney function that requires dialysis, a kidney transplant, or supportive care.

WHAT IT IS
Permanent kidney failure needing treatment to replace kidney function

BODY SYSTEM
Kidneys and urinary system

MAIN SYMPTOMS
Fatigue, swelling, nausea, itching

WHAT CAUSES IT
Long-term kidney damage from diabetes, high blood pressure, or other conditions

HOW IT IS DIAGNOSED
Blood and urine tests, imaging, and clinical assessment

MAIN TREATMENT
Dialysis, kidney transplant, or conservative kidney management

CAN IT BE CURED?
No - treatment replaces lost kidney function

IS IT AN EMERGENCY?
Sometimes - severe breathlessness, chest pain, confusion, or missed dialysis

LONG-TERM OUTLOOK
Ongoing treatment needed; transplant may improve health and survival

Overview

End-stage kidney disease means the kidneys have permanently lost most of their ability to work. It is also called end-stage renal disease or kidney failure and is the most advanced stage of chronic kidney disease.

Healthy kidneys remove waste and extra water from the blood. They also help control blood pressure, balance minerals such as potassium, support red blood cell production, and keep bones healthy. When kidney function becomes very low, wastes, fluid, and minerals can build up to harmful levels.

Some people have few symptoms at first. Others develop fatigue, swelling, nausea, itching, breathlessness, or difficulty concentrating.

Treatment is usually needed to replace some kidney function. The main options are dialysis and kidney transplantation. Conservative kidney management focuses on controlling symptoms and supporting quality of life without dialysis or transplantation.

Choices depend on your health, preferences, daily life, and whether transplantation is possible. Planning early provides time to understand and prepare for treatment.

Symptoms

Symptoms often develop gradually and may be caused by a build-up of waste, fluid, or minerals. Anaemia, meaning too few healthy red blood cells, can also contribute.

Possible symptoms include:

Many other conditions can cause these symptoms, so blood tests and a medical assessment are needed.

Symptoms may improve with dialysis, but dialysis does not replace every function of healthy kidneys. Problems such as fatigue or itching may need separate treatment.

- Ongoing tiredness, weakness, or reduced stamina
- Swelling in the feet, ankles, legs, hands, or face
- Shortness of breath, especially if fluid collects in the lungs
- Nausea, vomiting, reduced appetite, or an unusual taste
- Itchy or unusually dry skin
- Muscle cramps or restless legs
- Trouble sleeping, concentrating, or thinking clearly
- Passing much less urine, although some people still pass normal amounts
- Changes in blood pressure
- Weight change from fluid gain or poor appetite

Causes and risk factors

End-stage kidney disease usually develops after kidney damage has continued for months or years. Common causes are diabetes and long-term high blood pressure.

Other causes include:

Risk is higher with chronic kidney disease, diabetes, high blood pressure, heart and blood

vessel disease, or a family history of kidney failure. Smoking and poor control of blood pressure or blood glucose can worsen kidney damage.

More than one factor may be involved, and sometimes the original cause cannot be identified.

- Diseases affecting the kidneys' tiny filtering units
- Polycystic kidney disease and other inherited conditions
- Autoimmune conditions such as lupus
- Repeated kidney infections or long-term blockage of urine flow
- Kidney problems present from birth
- Long-term exposure to certain medicines or toxins
- Repeated or severe sudden kidney injury

Diagnosis

Diagnosis is based on your health history, examination, and test results. One abnormal blood test does not always mean end-stage kidney disease because sudden kidney injury can also reduce kidney function.

A blood test measures creatinine, a waste product removed by the kidneys. This is used to estimate the glomerular filtration rate, or eGFR. An eGFR below 15 is classed as the most severe stage of chronic kidney disease when it remains low for at least three months.

The decision to start dialysis is not based on eGFR alone. Symptoms, fluid overload, potassium levels, acid balance, nutrition, and other health problems also matter.

Other assessments may include:

If transplantation is being considered, further tests assess whether surgery and anti-rejection medicines are suitable.

- Urine tests for protein, blood, infection, and other abnormalities
- Blood tests for potassium, bicarbonate, calcium, phosphate, and anaemia
- Ultrasound imaging to check kidney size and look for blockage
- Heart tests if fluid or mineral changes may be affecting the heart
- A kidney biopsy in selected cases when the result may change treatment

Treatment and management

Treatment aims to replace essential kidney functions, control symptoms, and support daily life.

Haemodialysis filters blood through a dialysis machine. Treatment may take place at a dialysis centre or at home. It requires access to the bloodstream, often through a surgically created connection called a fistula.

Peritoneal dialysis uses the lining inside the abdomen as a filter. Dialysis fluid passes through a soft tube into the abdomen and is later drained. Exchanges may be done by hand during the day or by a machine overnight.

Kidney transplantation places a healthy donated kidney into the body. It can replace kidney function more fully than dialysis but is not suitable or available for everyone. Lifelong anti-rejection medicine is required, and the kidney may not work forever.

Conservative kidney management provides active care without dialysis or transplantation. It may be chosen when dialysis is unlikely to improve wellbeing or when someone prefers comfort-focused care. Treatment can address breathlessness, itching, nausea, anaemia, swelling, and emotional concerns.

Other management may include medicines for blood pressure, anaemia, mineral problems, or excess fluid. Nutrition advice may cover salt, fluid, potassium, phosphorus, protein, and energy. Restrictions must be personalised because unnecessary limits can cause poor nutrition.

Tell your kidney team about all medicines, vitamins, and herbal products you use. Some can build up when kidney function is low. Non-steroidal anti-inflammatory drugs, such as ibuprofen, may cause further kidney problems and should not be used unless a clinician familiar with your condition says they are appropriate.

Medicines commonly used for this include dapagliflozin . Which one suits you, if any, is a decision for you and your doctor.

Complications

Regular blood tests and follow-up help identify complications before they cause major symptoms.

Possible complications include:

Dialysis can cause low blood pressure, cramps, fatigue, infection, or access problems. Transplantation carries surgical risks, while anti-rejection medicines increase susceptibility to some infections and other complications.

- Fluid overload, causing swelling or breathlessness

- High potassium, which may disturb the heart's rhythm
- Anaemia, causing tiredness, weakness, or breathlessness
- Acid build-up in the blood
- Weak bones and hardened blood vessels from mineral imbalance
- High blood pressure and increased cardiovascular risk
- Poor appetite, weight loss, and muscle loss
- Nerve problems, itching, sleep disturbance, or restless legs
- Infection or blockage involving dialysis access
- Peritonitis during peritoneal dialysis

Prevention

End-stage kidney disease cannot always be prevented. Inherited conditions, congenital abnormalities, autoimmune illness, and severe kidney injury may progress despite care.

With earlier-stage chronic kidney disease, managing blood pressure and diabetes, stopping smoking, treating urinary blockage, and using kidney-protective medicines when appropriate may slow further damage.

Attend planned blood and urine tests. Do not start over-the-counter medicines or supplements without checking that they are safe for reduced kidney function.

Healthy habits cannot restore permanently lost kidney tissue, but they can support heart health, nutrition, treatment tolerance, and wellbeing.

Living with it and what to expect

End-stage kidney disease is a long-term condition. Without a functioning transplant, kidney function usually does not recover. Treatment may change as symptoms, health, and personal priorities change.

Dialysis becomes part of the weekly routine. Centre-based haemodialysis requires regular appointments. Home haemodialysis or peritoneal dialysis may offer more control over timing but requires training, storage space, and ongoing support.

Many people continue family life, hobbies, travel, work, or education, although energy levels and treatment schedules may require adjustments. Social workers, dialysis staff, employers,

and education services may help with transport, finances, and scheduling.

A successful transplant often reduces dietary and fluid restrictions and removes the need for dialysis. Daily anti-rejection medicine and regular monitoring remain necessary.

People choosing conservative management still receive planned care. As kidney function worsens, fatigue, appetite loss, sleepiness, swelling, and breathlessness may increase. Kidney and palliative care teams can treat symptoms and help with practical, emotional, and future-care decisions.

Depression, anxiety, and treatment fatigue can occur. Tell your care team if low mood, worry, or loss of motivation affects daily life.

When to get medical help

Keep routine kidney appointments even if you feel well. Contact your kidney or dialysis team promptly for increasing swelling, worsening itching, persistent nausea, reduced appetite, unexpected weight change, or a clear change in urine output.

If you receive dialysis, seek same-day advice for:

Call emergency services for severe difficulty breathing, chest pain, fainting, a seizure, new severe confusion, or symptoms of a serious allergic reaction. Uncontrolled bleeding from a dialysis fistula or graft is also an emergency. Apply firm pressure to the bleeding area while waiting for help.

- A missed dialysis session or interrupted treatment
- Fever, redness, pain, swelling, or discharge around dialysis access
- A fistula that has stopped buzzing or vibrating
- Cloudy peritoneal dialysis fluid or new abdominal pain
- Repeated vomiting or diarrhoea affecting fluid intake
- Rapid weight gain or increasing breathlessness

Common questions

Is end-stage kidney disease the same as kidney failure?

Yes. Both terms describe permanent, advanced loss of kidney function. Sudden kidney failure, also called acute kidney injury, is different and may improve.

Can damaged kidneys start working again?

Kidney function may recover after a sudden injury. Established end-stage kidney disease caused by long-term scarring usually does not. A transplant provides kidney function using a donated kidney but does not repair the original kidneys.

Can I live without dialysis?

If the kidneys can no longer maintain safe fluid, mineral, and waste levels, dialysis or a working transplant is needed to replace those functions. Conservative management without dialysis is also an option for some people, focusing on symptoms, comfort, and personal priorities.

Do I have to stop drinking water?

Not everyone needs the same fluid limit. It depends on urine output, swelling, heart health, blood pressure, and dialysis type. Follow your kidney team's individual advice. Restricting fluid without advice can cause dehydration or poor nutrition.

Can I travel while having dialysis?

Often, but preparation is needed. Haemodialysis may be arranged at another centre, and some people travel with home therapy equipment. Check availability, supplies, insurance, infection precautions, and medical stability well in advance.

How long can someone live with end-stage kidney disease?

There is no single timeline. Outlook depends on age, heart health, other conditions, treatment choice, dialysis complications, and whether transplantation is possible. Your kidney team can explain what these factors may mean for you.

Sources

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