

3. Proteinuria

Another name for protein in the urine is proteinuria.

Proteinuria

I have protein in my urine: what does it mean?

Protein is detected in the urine by using a test called urinalysis. Occasionally, when there is a lot of protein present, the urine can become smoky in colour and make a lot of bubbles or froth in the toilet. It is not uncommon and in the majority of people it does not indicate any serious health problem, but it should **always** be checked out properly. Another name for protein in the urine is proteinuria.

An excess of protein in the urine usually results from leakage of protein through the filters of the kidney (glomeruli). An increase in the amount of protein in the urine may also be accompanied by a rise in cholesterol and triglyceride concentrations in the blood, due to increased production of these blood lipids by the liver. Inflamed glomeruli allow the escape of larger particles into the urine such as red blood cells, white blood cells and protein into the urine. The loss of a large amount of protein in this way can leave lower than usual protein levels in the blood stream, causing fluid to leak from the blood into the tissues of the body. This will appear as swelling of the ankles, feet, hands and puffiness around the eyes. Such swelling is known as oedema.

An increase in urinary protein may be caused by glomerulonephritis (see also section 4), a structural abnormality of the kidneys, diabetes mellitus or a urinary tract infection.

Protein in the urine may also be due to a condition known as **orthostatic proteinuria**. This is a condition where there is an increased leakage of protein into the urine when a person is standing up. It is best diagnosed by testing the urine for protein first thing in the morning and again in the evening, on a few successive days. If the urine contains no protein first thing in the morning, protein appears only after standing and the urine looks normal under a microscope, then orthostatic proteinuria is the likely diagnosis.

A GUIDE FOR PATIENTS

The treatment required depends on the cause, the amount of protein found in the urine, and whether there is associated impairment of kidney function.

Proteinuria continued...

What tests are likely to be required?

As for a patient with haematuria, a number of investigations may be required to determine the cause and severity of the proteinuria.

A **urine culture**, a **24-hour urine collection** and **blood tests** are often required to determine the quantity of protein in the urine (normally less than 0.15 grams per day), to decide whether the kidneys are working satisfactorily and to determine if and why a glomerulonephritis is present (see details of tests in section 2). **Imaging** of the kidneys and bladder with an **ultrasound** of the urinary tract, an **IVP** (intravenous pyelogram), or **CT scan** may be requested.

Occasionally, if the tests suggest a more serious form of glomerulonephritis, a **renal biopsy** may be recommended (see also section 16).

What treatment will be required?

The treatment required depends on the cause, the amount of protein found in the urine and whether there is also an impairment of kidney function.

If an **infection** is present antibiotics are usually required (see also section 9).

If **diabetes mellitus** is responsible, careful control of blood glucose levels through strict adherence to a healthy diet and, if necessary, the use of medications to maintain the blood glucose within the normal range is all critically important. Strict blood pressure control is also very important. Most patients with diabetes mellitus will also be prescribed one of the drugs called angiotensin converting enzyme inhibitors (ACE inhibitors) or angiotensin II receptor antagonists (AIIAs), the use of which has been shown to slow deterioration in kidney function. Large clinical studies have confirmed that these measures do protect the kidneys. If **glomerulonephritis** is diagnosed, there are a number of measures that may be required to protect the kidney function (see also section 4).