Identifying Unhealthy Kidneys
What Do I Need to Know About Proteinuria?

Information for patients

You have been offered a test for Proteinuria and this leaflet tells you what this means.
What is proteinuria?
Proteinuria describes a condition in which urine contains an abnormal amount of protein. Proteins are the building blocks for all our body parts, including muscles, bones, hair, and nails. Proteins that circulate in our bloodstream also perform a number of important functions. They protect us from infection, help our blood clot, and help keep the right amount of fluid circulating around our bodies, so it is important to maintain the correct levels of proteins in our bodies. Our kidneys help do this, when they are healthy.

Healthy Kidneys
Healthy kidneys contain roughly a million functioning units which are called nephrons. Each nephron consists of a specialised filter which is called the glomerulus and some highly specialised tubing. As blood passes through healthy kidneys the waste products in the blood are filtered out along with water. The things the body wants to keep are left behind in the blood, such as proteins and blood cells. The end product of this process is urine, which normally contains mainly excess fluid and waste products as most proteins are too big to pass through the kidneys’ filters.

Why is proteinuria important?
We all leak tiny amounts of albumin (a protein which has a small molecular size and is water-soluble) into our urine. If the filters in our kidneys are damaged, increased amounts of albumin and other larger proteins from our blood can pass through and escape into the urine. This abnormal amount of protein in the urine is known as proteinuria.

Research shows that the level and type of proteinuria (whether the urinary proteins are albumin only – albuminuria - or include other proteins) are a good indicator of the extent of kidney damage. Proteinuria is also a sign that someone is at risk of developing progressive deterioration of kidney function. We also know that even small degrees of albuminuria/proteinuria are associated with an increased risk of the development of heart and blood vessel disease.
What can cause protein leaks from kidneys?
Many diseases can cause inflammation of the kidney filters, a condition which is also known as ‘glomerular nephritis’, ‘nephritis’ or ‘nephropathy’. Other processes that can damage the kidney filters and cause proteinuria include diabetes, high blood pressure (hypertension), and some other forms of kidney diseases.

Tests to determine proteinuria
NICE (the National Institute for Health and Clinical Excellence) recommends that anybody at risk of developing chronic kidney disease (CKD), or with reduced kidney function, should have their urine tested to determine the amount of protein in it.

To test for kidney problems, your doctor may do an initial test on a sample of your urine with an indicator strip or ‘dipstick’. Most dipstick tests will only show if a large amount of protein is present, however there are some more sensitive tests for albumin only which if it is present, the term albuminuria may be used.

If your doctor suspects you may have CKD or reduced kidney function, he/she will send a urine sample (preferably the first urine specimen of the day) to the local laboratory to be tested. This is the only way to identify small quantities of albumin and to measure the amount of protein present.

You may be asked to repeat the sample, particularly if the first one was not from early in the morning, because there are other factors which may cause a small increase in the amount of albumin.

What are the signs of proteinuria?
Large amounts of protein in your urine may cause it to look foamy in the toilet. Also, the loss of protein from your body means your blood can no longer soak up enough fluid, and you may notice swelling in your hands, feet, abdomen, or face. These are signs of very large protein loss.

Most people who have proteinuria will not notice any abnormal signs or symptoms related to this. Laboratory testing is the only way to find out how much protein you have in your urine.

Who should have their urine routinely tested for proteinuria?
NICE has suggested that the following people should be offered a urine test for proteinuria:

- people with kidney function known to be less than 60% of normal
- people with diabetes
- people with high blood pressure (hypertension)
• people with heart and blood vessel (cardiovascular) disease (ischaemic heart disease, chronic heart failure, peripheral vascular disease and cerebral vascular disease)
• people with complex diseases which may involve the kidneys – for example, systemic lupus erythematosus (this is a disease where a person’s immune system attacks and injures the body’s own organs and tissues)
• people with a family history of kidney failure or a family history of inherited kidney disease
• people found to have blood in their urine.

Proteinuria and Diabetes
Diabetes is a very common cause of kidney damage. This applies to people with any form of diabetes whether Type 1 (insulin required) or Type 2 (which is treated with diet and tablets but may require insulin). In people with diabetes, the first sign of deteriorating kidney function is the presence of small amounts of albumin in the urine, a condition called microalbuminuria. At this stage blood tests for kidney function may be normal, and specific treatment prescribed by your doctor may be able to reverse the damage for some time.

As kidney disease progresses the amount of albumin in the urine increases, and microalbuminuria becomes fully-fledged proteinuria or macroalbuminuria. Even when proteinuria has developed, good diabetes control and good blood pressure control can slow down the rate of progression of kidney damage.

How often do I need to have a test for proteinuria?
People who are at increased risk of developing kidney disease should have this test annually as a minimum or as part of their routine checkups by the doctor. The exact frequency should depend on the clinical situation (level of risk) of the patient. It is important that people with chronic kidney disease and diabetes should have a test for proteinuria as part of their regular reviews.

If I have proteinuria, will I need specific treatment?
If proteinuria is confirmed, your doctor will do other tests and examinations to find out the cause. This may include referral to a specialist kidney doctor (nephrologist) who will help to develop your kidney care plan. Your treatment may include medicines; lifestyle changes such as losing excess weight, exercising and stopping smoking, and sometimes changes in your diet.

If you have diabetes, high blood pressure or both, the first goal of treatment will be to control your blood glucose and blood pressure.
Managing diabetes and high blood pressure with proteinuria
If you have diabetes you should test your blood glucose often, follow a healthy eating plan, take your medicines, and get plenty of exercise. If your blood glucose is above your targets contact the doctor or nurse looking after your diabetes for help.

If you have diabetes or high blood pressure, then your doctor may prescribe a medicine from a class of drugs called ACE inhibitors (angiotensin-converting enzyme inhibitors; most of these medicines have drug names ending in -pril). Alternatively your doctor may prescribe a similar class of drugs called ARBs (angiotensin receptor blockers; most of these medicines have drug names ending in -sartan). These drugs have been found to protect kidney function even more than other drugs that provide the same level of blood pressure control. Sometimes they are associated with a change in kidney function and your doctor will ask you to have more frequent blood tests if the dose of these drugs is being changed.

In recent National Guidelines for the management of kidney disease NICE recommends that people with kidney disease and proteinuria have blood pressure levels controlled to levels of systolic blood pressure of between 120 and 130 and the diastolic blood pressure to be less than 80. These levels have been shown to be the most effective at protecting the kidney and this may require two or more blood pressure medicines.

Points to Remember
• Proteinuria is a condition in which urine contains an abnormal amount of protein.
• The term albuminuria is also often used because some tests measure this protein specifically, and it is the major type of protein in the urine.
• Proteinuria may be a sign that your kidneys are damaged and that you are at risk of developing progressive kidney disease.
• Several health organisations recommend that people at risk of developing kidney disease should be regularly checked for proteinuria, so that kidney disease can be detected and treated before it has progressed.
• You may have proteinuria without noticing any signs or symptoms. Laboratory testing is the only way to find out how much protein you have in your urine.
• If you have diabetes or hypertension, or both, the first goal of treatment will be to control your blood glucose and blood pressure.
If you have any questions, in the first instance, please speak to your GP.
For more information about the proteinuria test for GPs and laboratories, please visit http://www.dh.gov.uk/en/Healthcare/Pathology/DH_096049

**Other helpful websites**

Department of Health   www.dh.gov.uk/renal

British Renal Society   http://www.britishrenal.org

National Kidney Federation   http://www.kidney.org.uk

NHS Kidney Care   http://www.kidneycare.nhs.uk

Labs test on-line   http://www.labtestsonline.org.uk

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