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LANCET LABORATORIES Rwanda

Newsletter

WHAT IS CREATININE?

Compiled by: Cerballiance Editorial Board

Creatinine in a few words

- Creatinine is a waste product of the body that comes from the breakdown of muscle creatine. It is eliminated in the urine by filtration in the kidneys. When the kidneys' ability to eliminate waste decreases, the amount of creatinine increases in the blood. Its dosage in the blood, therefore, depends on kidney function but also on muscle mass.
- For the screening, diagnosis or monitoring of kidney disease, a blood creatinine test is essential. To overcome variations related to muscle mass, a clearance calculation is then made from the result of the determination of creatinine, sex, age, ethnicity, and weight of the patient. A clearance result of less than 60 mL/min is a sign of renal impairment.
- Creatinine testing and clearance calculation are essential for screening for kidney disease, which most often progresses silently to an advanced stage.

What is Creatinine ?

- Creatinine is a waste product resulting from the breakdown of a substance present in the muscles and playing a role in muscle contraction: Creatine.
- The release of Creatinine into the blood, therefore, increases when muscle mass or activity increases.
- Creatinine is then eliminated in the urine by filtration in the kidneys.
- In some cases, the ability of the kidneys to eliminate waste products such as creatinine may decrease this is called kidney failure.
- The waste then accumulates in the blood and as a result, the creatinine dosage increases.
- The amount of creatinine in the blood, therefore, reflects the kidneys' ability to eliminate waste but also depends on muscle mass.

When to do the Creatinine dosage?

The determination of creatinine with a calculation of clearance makes it possible to screen for renal failure. This dosage is very useful because patients most often do not have any symptoms, except when the disease is already very advanced. Kidney disease does not cause pain. It can sometimes be revealed by oedema or high blood pressure.

In screening, creatinine testing is usually associated with the search for albuminuria (search for protein in the urine), which is another marker of kidney damage. Before performing certain radiology examinations requiring the use of iodinated contrast agents eliminated by the kidneys, a creatinine assay should be performed. Indeed, these products must be used with caution in case of renal failure. The dosage of creatinine is also recommended to adapt the dosage of certain drugs strongly eliminated by the kidneys.

Why Creatinine clearance?

- In order to overcome variations in creatinine levels related to muscle mass, different calculation formulas have been developed to determine the glomerular filtration rate or creatinine clearance, i.e. the ability of the kidneys to filter the body's waste per unit of time.
- Three formulas can be used: Cockcroft and Gault, MDRD and CKD EPI. They take into account the age, gender, ethnicity, dosing technique used and, for the Cockcroft and Gault formula, the patient's weight. MDRD and CKD EPI formulas are currently recommended because they are more efficient, especially for the elderly.
- The more creatinine increases, the lower the clearance. Low clearance means that the kidneys are not functioning properly: moderate renal failure below 60 mL/min and severe renal failure below 30mL/min.
- You should know that we physiologically lose 1% of kidney function per year from the age of 40, or about 1 mL / min of filtered volume.

What are my kidneys used for?

In a normal situation, each person has 2 kidneys, each consisting of about a million functional units, the nephrons. Nephrons have several important roles in the body.

The **best-known function is the elimination of waste and toxins** present in the blood, concentrating them to lead to the formation of urine. But the kidneys are also at the origin of the **secretion of hormones:**

- EPO, which is used to stimulate the regeneration of red blood cells. vitamin D, which is used for bone mineralization.
- Renin, which is used to regulate blood pressure.

- When a certain number of **nephrons** no longer function, these roles are no longer optimally performed: we speak of **kidney failure** or **kidney disease.**

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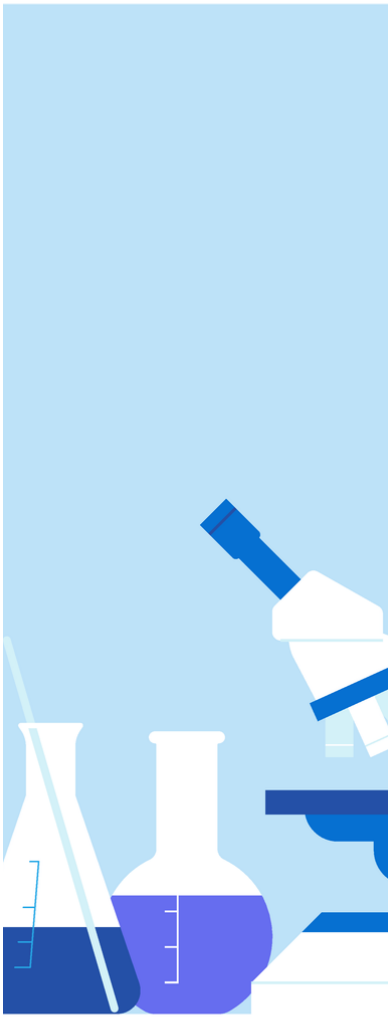
What to do in case of kidney failure?

To date, there is no cure for kidney disease. On the other hand, when the diagnosis of chronic renal failure has been made, certain preventive measures make it possible to limit its progression, hence the interest of discovering it as soon as possible.



1. Follow dietary advice

It is advisable to limit protein consumption to one serving of meat, fish or eggs per day (approximately: 0.8 mg of protein/kg/day).
Limiting salt intake reduces the pressure on the kidney filter and prevents their alteration. It is advisable not to consume more than 6g of salt per day (and replace it with aromatics and spices).
Some patients also need to track their potassium and/or phosphorus intake.
Water consumption must be adapted to thirst (about 1.5L of water per day).

2. Taking your medication:

The general practitioner or nephrologist prescribes medications to lower blood pressure and decrease proteinuria (the amount of protein in the urine). These drugs must make it possible to obtain a blood pressure below 140/90. If necessary, the doctor may recommend regular blood pressure measurements and note the values obtained in a follow-up notebook.

3. Regular physical activity

4. Quit smoking, Tobacco is recognized as an aggravating factor.

5. Schedule to take blood tests regularly.

Blood tests make it possible to monitor the disease and to adapt if necessary, the drug treatment and dietary advice.
The blood test usually includes:

- The determination of creatinine and the evaluation of its clearance;
- The determination of albuminuria or microalbuminuria;
- Potassium dosage;
- Complete blood count (looking for anemia);
- The determination of calcium, phosphorus and vitamin D (bone balance).
- The blood test is often associated with tests carried out on urine collected for 24 hours.

Visit your doctor or nephrologist regularly:
Even if you do not experience any symptoms, these consultations are essential to monitor your kidney disease: take blood pressure, check blood tests, adapt medications if necessary. Regular monitoring helps slow the progression of the disease.

Contact health professionals:
Remember to inform the pharmacist and health professionals of your kidney disease. Indeed, some drugs are contraindicated in case of renal failure (for example, nonsteroidal anti-inflammatory drugs, such as ibuprofen, which can be dispensed without a prescription). The use of iodinated contrast media in some radiology examinations may also be contraindicated.

Source Creatinine and renal failure | Cerballiance

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