

Creatinine is a chemical molecule that is present in the serum (liquid portion) of the blood. It's produced from another molecule, creatine, which is a component of muscle. The amount of creatinine the body produces each day depends on the person's muscle mass – a young, muscular man, for example, produces more creatinine than a petite elderly woman does. Because muscle mass normally changes very little, creatinine is usually produced at approximately the same rate every day in each person. It ends up as a waste product in the blood that is transported to the kidneys, where it's filtered out of the blood and removed from the body in the urine. When the kidneys are functioning normally, the amount of creatinine in the serum should remain even. When they're not working properly, the serum creatinine level increases. This level is often used to determine how well the body's kidneys are functioning. We measure it with a serum creatinine test, a useful and inexpensive method of evaluating how well the kidneys are working.

(Image:

[https://plus.unsplash.com/premium\\_photo-1663036952524-ce9af6257d93?ixid=M3wxMjA3fDB8MXxzZWZFY2h8NDF8FEJ1aWxkJTlwTXVzY2xlfGVufDB8fHx8MTc1NDA2MTI2NHww5Cu0026ixlib=rb-4.1.0](https://plus.unsplash.com/premium_photo-1663036952524-ce9af6257d93?ixid=M3wxMjA3fDB8MXxzZWZFY2h8NDF8FEJ1aWxkJTlwTXVzY2xlfGVufDB8fHx8MTc1NDA2MTI2NHww5Cu0026ixlib=rb-4.1.0))Creatinine clearance, which is calculated using serum creatinine concentration and a patient's gender, age and weight, is a better estimation of kidney function than is the serum creatinine level. Creatinine clearance reflects the rate at which the kidneys filter blood, which doctors call the glomerular filtration rate (GFR). This is another measure of kidney function. If the kidneys don't filter blood effectively, the glomerular filtration rate decreases and serum creatinine levels rise. As a result, serum creatinine level is an indirect measure of glomerular filtration rate. Unfortunately, there isn't a good correlation between serum creatinine and kidney damage early in kidney disease. By working harder, the kidney can compensate for damage in the early stages of kidney disease. At the point that the level of serum creatinine goes up, the glomerular filtration rate may be reduced by as much as half. For this reason, the serum creatinine test isn't useful in diagnosing early-stage kidney disease, but it is used to detect more substantial kidney disease.


The serum creatinine test is more sensitive of kidney function than the blood urea nitrogen test (often referred to as the BUN test), which measures the amount of nitrogen in the blood that comes from urea. Urea is produced by the liver as a waste product of the digestion of protein and is also removed from the blood by the kidneys. Women have lower serum creatinine levels than men because they have less muscle mass. Serum creatinine test results can also vary depending on the laboratory performing the test and which lab method was used. Typical serum creatinine ranges are 0.5 to 1.0 milligrams per deciliter for women and 0.7 to 1.2 mg/dl for men. A serum creatinine level of 2.0 mg/dl may indicate normal kidney function in a [Alpha Surge Male performance booster](#) bodybuilder, but 0.7 mg/dl can indicate significant renal disease in a frail old woman. The ability to look at changing levels over time is more informative for patients and doctors than is a single measurement at one point in time.

For example, a serum creatinine level of 1 mg/dl might be considered normal – unless it recently increased from 0.6, which would make it very abnormal. How are kidney disease and heart disease linked? The increased risk of heart disease is evident in patients with kidney disease, and heart disease is the major cause of death among patients with severe (end-stage) kidney disease. A recent study reported that most patients hospitalized with acute heart failure have significant kidney disease. Increased serum creatinine level and high blood pressure are both factors that increase the risk of both heart disease and kidney disease. Kidney disease and heart disease are both often characterized by symptoms that can contribute to an increased risk of the other. Some drugs that are commonly used to treat patients with heart failure (like diuretics and angiotensin-converting enzyme (ACE) inhibitors) can affect kidney function. Patients taking these drugs should have serum creatinine tests to check their kidney function. Coca SG, Peixoto AJ, Garg AX, et al.

The prognostic importance of a small acute decrement in kidney function in hospitalized patients: a

systematic review and meta-analysis. Am J Kidney Dis. Damman K, Navis G, Voors AA, et al. Worsening renal function and prognosis in heart failure: systematic review and meta-analysis. J Card Fail. 2007;13:599-608. De Santo NG, Cirillo M, Perna A, et al. The kidney in heart failure. Diskin CJ. Creatinine and glomerular filtration rate: evolution of an accommodation. Wencker D. Acute cardio-renal syndrome: progression from congestive heart failure to congestive kidney failure. Curr Heart Fail Rep. Heywood JT, Fonarow GC, Costanzo MR, et al. High prevalence of renal dysfunction and its impact on outcome in 118,465 patients hospitalized with acute decompensated heart failure: a report from the ADHERE database. Hillege HL, Girbes AR, de Kam PJ, et al. Renal function, neurohormonal activation, and survival in patients with chronic heart failure. Obialo CI. Cardiorenal consideration as a risk factor [Alpha Surge Male performance booster](#) for heart failure. Chittineni H, Miyawaki N, Gulipelli S. et al. Risk for acute renal failure in patients hospitalized for decompensated congestive heart failure. Schrier RW. Role of diminished renal function in cardiovascular mortality: marker or pathogenetic factor? J Am Coll Cardiol.

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