

High blood pressure can cause kidney disease and, in turn, kidney disease can cause high blood pressure. Good blood pressure control will slow the progression of kidney disease.

Diabetes Mellitus is a major cause for kidney failure. Good blood sugar control will also delay the progression of kidney disease.

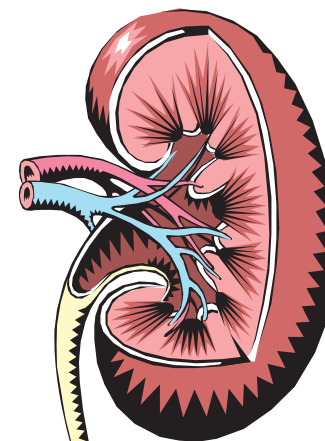
The earlier one detects kidney disease, the more likely one can slow or even halt the progression of kidney disease. Rarely, if ever, can one reverse CKD. However, one can slow or stop the progression with careful medical management. Not all patients with CKD need to end up on dialysis or with a transplant.

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eGFR and CKD

Estimated Glomerular Filtration Rate And Chronic Kidney Disease

WHAT IS eGFR?

The glomerular filtration rate (GFR) is the medical term used to measure the rate that the kidneys remove waste products from the blood stream.

The estimated GFR (eGFR) is a calculation of the actual GFR based on the serum creatinine, patient's age (if between 18 and 80), gender, and whether the patient is African-American or not.

Creatinine is a substance that one's muscles make and the kidneys remove from the blood stream. Daily production and elimination of creatinine is in balance. However, as kidney function declines, serum creatinine increases.

"Normal" serum creatinine used to be defined by a range of values like many other laboratory tests. For example, a range of creatinine for 0.7 to 1.3 mg/dL may be the normal for many laboratories. However, a large clinical study found that a given serum creatinine meant different levels of renal function in different individuals.

For example, a serum creatinine of 1.2 mg/dL appears to be in the "normal" range. However, for a 30-year-old African-American male, eGFR is 92 mL/min/1.73 m². The same serum creatinine represents an eGFR of 44 mL/min/1.73 m² in a 70-year-old Caucasian female. The serum creatinine is the same, but in one patient, kidney function is twice that of another patient. Thus, reliance on the serum creatinine alone will easily lead to incorrect judgments of the patient's kidney function.

HOW IS eGFR USED?

Patients who gradually lose kidney or renal function over months to years have what is called chronic kidney disease (CKD). eGFR is used to stage the amount of renal disease that a

patient has. CKD is divided into five stages.

- **Stage 1.** eGFR *greater than 90* mL/min with other evidence of kidney damage.
- **Stage 2.** eGFR between **60 and 89** mL/min with other evidence of kidney damage.
- **Stage 3.** eGFR between **30 and 59** mL/min.
- **Stage 4.** eGFR between **15 and 29** mL/min.
- **Stage 5.** eGFR *less than 15* mL/min

THIS SOUNDS TOO MEDICAL FOR ME.
IS THERE AN EASIER WAY TO THINK
ABOUT IT?

Yes, instead of eGFR and mL/min, one can think of kidney or renal function as a percentage. For example, if a patient has stage three CKD, he or she has between 30 and 59 percent (%) kidney function remaining. Most of us are used to thinking in percentages.

WHO SHOULD HAVE eGFR
MEASURED?

As we age, renal function declines in all of us. Patients over 60 should have their eGFR measured.

Diabetes Mellitus and Hypertension (high blood pressure) are the two most common causes for CKD. Thus, all patients with these two diseases should have eGFR measured when first diagnosed, and then routinely during follow-up.

Others with cardiovascular disease and with family history of kidney disease or urologic problems should also be monitored.

There are other conditions that also require monitoring. These include use of certain medications that are toxic to the kidney. Certain pain pills are in this category. Previous history of acute kidney damage, autoimmune diseases, and some serious infections and cancers increase ones risk of CKD. Finally, some ethnic minorities are at higher risk.

WHAT CAN I DO ABOUT THIS?

If you have any of the risk factors for CKD, ask your doctor if he or she has measured your serum creatinine recently. If so, most clinical laboratories should also report the eGFR with the serum creatinine. Ask your doctor what your eGFR is or the percent of kidney function that you have. Remember, knowing the creatinine alone is not enough.

If you have any of the first four stages of CKD, there are steps that you can take to reduce the risk that your kidney disease will progress to stage 5. At stage 5, most patients will require a substitute for their kidney function. This usually means dialysis. It might also mean the need for a kidney transplant. We all want to avoid this if we can.