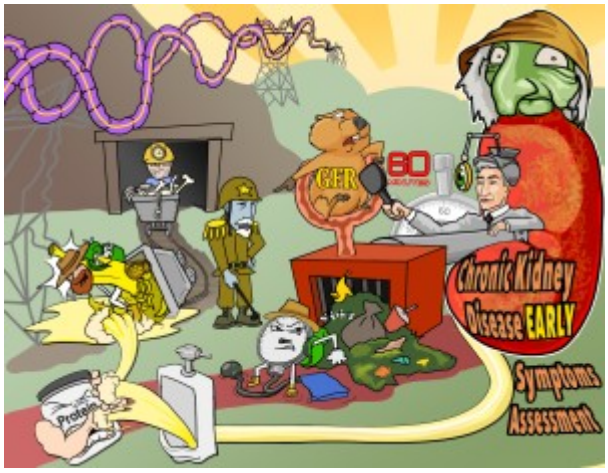
# Chronic Kidney Disease Early Symptoms Assessment

Chronic kidney disease (CKD) is the permanent loss of kidney function that occurs gradually over months or years. A person meets the criteria for chronic kidney disease when their glomerular filtration rate drops below 60 milliliter per minute (mL/min). When kidney function declines, waste products begin to accumulate in the body, causing clinical manifestations such as proteinuria, weakness, hypertension, hyperkalemia, mineral and bone disorders, and neuropathy.




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## Characteristics

**GFR < 60mL/min**
Gopher < 60-min-reporter
Glomerular filtration rate (GFR) is a value that describes how efficiently the kidneys are working. More specifically, how much fluid (in milliliters) passes through the renal glomeruli each minute. A defining feature of chronic kidney disease is a GFR value of less than 60 mL/min for more than three months.

**Accumulation of Waste Products**
Accumulation of Garbage
When the kidneys are failing, filtration and excretion of waste products become less efficient. Byproducts of protein metabolism, such as urea and creatinine, begin to accumulate in the body. The inability to excrete these waste products can lead to uremia, among other adverse conditions.

## Clinical Features

**General Malaise**
General Malaise
Central nervous system depression related to various electrolyte imbalances and the accumulation of waste products can lead to complaints of weakness and dizziness in patients with chronic kidney disease.

**Hypertension**
Hiker-BP
When the kidney function decreases, the body retains excess fluid and sodium, causing an increase in blood pressure. Patients with chronic kidney disease also tend to have elevated lipid and triglyceride levels, which can also contribute to high blood pressure. Elevated renin production caused by impaired renal perfusion contributes to hypertension in some patients.

**Proteinuria**
Mr. Protein-in-Urine
Excess protein is deposited into the urine when there is damage to the renal glomeruli, resulting in decreased serum protein levels (e.g. hypoalbuminemia). The presence of protein in urine is an abnormal finding, usually indicative of kidney disease.

**Hyperkalemia**
Hiker-banana
As the kidneys continue to fail, the excretion of wastes and electrolytes, such as potassium are negatively affected. The build-up of potassium in the body can lead to negative cardiac consequences.

**Mineral and Bone Disorders**
Mineral-miner and Bones Disordered
In patients with chronic kidney disease, improper renal filtration fails to remove excess phosphorus from the blood. An increase in phosphorus can cause a subsequent decrease in calcium levels. When the body senses that calcium levels are low, parathyroid hormone is secreted, which acts to draw calcium from

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the bones. This process can lead to osteomalacia or softening of the bones.

**Neuropathy**

Wavy Neuron

Neuropathy can develop from the increased accumulation of waste products, electrolyte imbalances, and metabolic acidosis associated with kidney failure. Dialysis may be needed to correct the various imbalances and to slow the progression of the neuropathies.

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