

# Cockroft and Gault estimation of glomerular filtration

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Endogenous creatinine clearance can be estimated from serum creatinine concentration without the need for urine collection by calculation using the Cocroft and Gault formula<sup>[1]</sup>:

for men:

$$Cl_{Kr} \text{ (ml/s)} = \frac{(140 - \text{věk [years]}) \cdot \text{tělesná weight [kg]}}{44.5 \cdot \text{sérový creatinine [\mu mol/l]}}$$

for women:

$$Cl_{Kr} \text{ (ml/s)} = 0.85 \cdot \frac{(140 - \text{věk [years]}) \cdot \text{tělesná weight [kg]}}{44.5 \cdot \text{sérový creatinine [\mu mol/l]}}$$

## Explanation of the calculation principle

Renal endogenous creatinine clearance is defined as the ratio of urinary creatinine waste (ie, the product of diuresis and urinary creatinine concentration) to serum creatinine concentration. Determining creatinine clearance is difficult, time-consuming, and often error-prone. It is therefore replaced by an estimate.

Since creatinine is not further metabolized in humans, its losses in the urine must equal its production. The rate of creatinine formation is almost constant and depends practically only on the total mass of skeletal muscle. It can therefore be estimated using anthropometric data (sex, age, body weight).

Creatinine clearance estimation is mainly used to classify a patient with renal insufficiency into a certain band according to the severity of the failure, e.g. if a reduced dose of a drug excreted by the kidneys needs to be determined. It is only suitable for patients with moderate or severe renal insufficiency.

Currently, the clearance estimate according to Cockroft and Gault is gradually being replaced by the MDRD equation.

## Links

### Related Articles

- Glomerular filtration
- MDRD equation
- CDK-EPI

### References

1. {{#switch: book |book = and Martin VEJRAŽKA. *Non-protein nitrogenous substances: Practical exercises in medical chemistry and biochemistry*. {{{issue}}} issue. Prague : Institute of Medical Biochemistry, 2009. 18 s. |collection = and Martin VEJRAŽKA. *Non-protein nitrogenous substances: Practical exercises in medical chemistry and biochemistry*. 1. release. Prague : Institute of Medical Biochemistry, 2009. 18 s. {{ #if: - | |article = *Incomplete article citation*. and Martin VEJRAŽKA. 2009, year 2009, |web = *Incomplete site citation*. and Martin VEJRAŽKA. Institute of Medical Biochemistry, ©2009. |cd = *Incomplete carrier citation*. and Martin VEJRAŽKA. Institute of Medical Biochemistry, ©2009. |db = *Incomplete database citation*. Institute of Medical Biochemistry, ©2009. |corporate\_literature = and Martin VEJRAŽKA. *Non-protein nitrogenous substances: Practical exercises in medical chemistry and biochemistry*. 1. release. Prague : Institute of Medical Biochemistry, 2009. 18 s.