

Calculating eGFR from different formulas

eGFR can be calculated from several different formulas based either on the concentration of P-creatinine, on the concentration of P-cystatin C or both. You will find the most common used formulas below. In order to be able to calculate the eGFR, you need to know age, gender and weight of the person.

The international recommended formulas for calculation of eGFR based on cystatin C are the “2012 CKD-EPI_{CysC}” formulas for persons >18 years:

Male & female:

For P-cystatin C ≤ 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{CysC}}) = 133 \cdot (P\text{-cystatin C}/0.8)^{-0.499} \cdot 0.996^{\text{age}} [\cdot 0.932 \text{ if female}]$$

For P-cystatin C > 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{CysC}}) = 133 \cdot (P\text{-cystatin C}/0.8)^{-1.328} \cdot 0.996^{\text{age}} [\cdot 0.932 \text{ if female}]$$

Units: eGFR in mL/min/1.73m², P-cystatin C in mg/L, age in years

The international recommended formulas for calculation of eGFR based on creatinine are the “2009 CKD-EPI_{Crea}” formulas for persons >18 years:

Female:

For P-creatinine ≤ 62 μmol/L:

$$eGFR(2009 \text{ CKD-EPI}_{\text{Crea}}) = 144 \cdot (P\text{-creatinine}/(0.7 \cdot 88.4))^{-0.329} \cdot 0.993^{\text{age}}$$

For P-creatinine > 62 μmol/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{Crea}}) = 144 \cdot (P\text{-creatinine}/(0.7 \cdot 88.4))^{-1.209} \cdot 0.993^{\text{age}}$$

Units: eGFR in mL/min/1.73m², P-creatinine in μmol/L, age in years

Male:

For P-creatinine ≤ 80 μmol/L

$$eGFR(2009 \text{ CKD-EPI}_{\text{Crea}}) = 141 \cdot (P\text{-creatinine}/(0.9 \cdot 88.4))^{-0.411} \cdot 0.993^{\text{age}}$$

For P-creatinine > 80 μmol/L

$$eGFR(2009 \text{ CKD-EPI}_{\text{Crea}}) = 141 \cdot (P\text{-creatinine}/(0.9 \cdot 88.4))^{-1.209} \cdot 0.993^{\text{age}}$$

Units: eGFR in mL/min/1.73m², P-creatinine in μmol/L, age in years

The international recommended formulas for calculation of eGFR based on both creatinine and cystatin C are the “2012 CKD-EPI_{Crea-CysC}” formulas for persons >18 years:

Female:

For P-creatinine ≤ 62 μmol/L and P-cystatin C ≤ 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{Crea-CysC}}) = 130 \cdot (P\text{-creatinine}/(62))^{-0.248} \cdot (P\text{-cystatin C}/(0.8))^{-0.375} \cdot 0.995^{\text{age}}$$

For P-creatinine ≤ 62 μmol/L and P-cystatin C > 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{Crea-CysC}}) = 130 \cdot (P\text{-creatinine}/(62))^{-0.248} \cdot (P\text{-cystatin C}/(0.8))^{-0.711} \cdot 0.995^{\text{age}}$$

For P-creatinine > 62 μmol/L and P-cystatin C ≤ 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{Crea-CysC}}) = 130 \cdot (P\text{-creatinine}/(62))^{-0.601} \cdot (P\text{-cystatin C}/(0.8))^{-0.375} \cdot 0.995^{\text{age}}$$

For P-creatinine > 62 μmol/L and P-Cystatin C > 0.8 mg/L:

$$eGFR(2012 \text{ CKD-EPI}_{\text{Crea-CysC}}) = 130 \cdot (P\text{-creatinine}/(62))^{-0.601} \cdot (P\text{-cystatin C}/(0.8))^{-0.711} \cdot 0.995^{\text{age}}$$

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Male:

For P-creatinine \leq 80 $\mu\text{mol/L}$ and P-cystatin C \leq 0.8 mg/L:

$$\text{eGFR(2012 CKD-EPI}_{\text{Crea-CysC}}) = 135 \cdot (\text{P-creatinine}/(80))^{-0.207} \cdot (\text{P-cystatin C}/(0.8))^{-0.375} \cdot 0.995^{\text{age}}$$

For P-creatinine \leq 80 $\mu\text{mol/L}$ and P-cystatin C $>$ 0.8 mg/L:

$$\text{eGFR(2012 CKD-EPI}_{\text{Crea-CysC}}) = 135 \cdot (\text{P-creatinine}/(80))^{-0.207} \cdot (\text{P-cystatin C}/(0.8))^{-0.711} \cdot 0.995^{\text{age}}$$

For P-creatinine $>$ 80 $\mu\text{mol/L}$ and P-cystatin C \leq 0.8 mg/L:

$$\text{eGFR(2012 CKD-EPI}_{\text{Crea-CysC}}) = 135 \cdot (\text{P-creatinine}/(80))^{-0.601} \cdot (\text{P-cystatin C}/(0.8))^{-0.375} \cdot 0.995^{\text{age}}$$

For P-creatinine $>$ 80 $\mu\text{mol/L}$ and P-cystatin C $>$ 0.8 mg/L:

$$\text{eGFR(2012 CKD-EPI}_{\text{Crea-CysC}}) = 135 \cdot (\text{P-creatinine}/(80))^{-0.601} \cdot (\text{P-cystatin C}/(0.8))^{-0.711} \cdot 0.995^{\text{age}}$$

Units: eGFR in mL/min/1.73m², P-creatinine in $\mu\text{mol/L}$, P-cystatin C in mg/L, age in years

References: The New England Journal of Medicine 2012;367:20-9

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