

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.

To be able to calculate the eGFR, you need to know age, gender, and weight of the person.

Units:

- P-Crea : $\mu\text{mol/L}$
- P-CysC : mg/L
- Age : Years
- eGFR : mL/min/1.73m^2

The international recommended formulas for calculation of eGFR based on Creatinine: "2009 CKD-EPI_{Crea}" formulas for persons >18 years:

Female:

For P-Creatinine $\leq 62 \mu\text{mol/L}$:

$$\text{eGFR (2009 CKD-EPI)}_{\text{Crea}} = 144 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.329} \times 0.993^{\text{age}}$$

For P-Creatinine $> 62 \mu\text{mol/L}$:

$$\text{eGFR (2009 CKD-EPI)}_{\text{Crea}} = 144 \times \left(\frac{\text{P-Crea}}{62} \right)^{-1.209} \times 0.993^{\text{age}}$$

Male:

For P-Creatinine $\leq 80 \mu\text{mol/L}$

$$\text{eGFR (2009 CKD-EPI)}_{\text{Crea}} = 141 \times \left(\frac{\text{P-Crea}}{80} \right)^{-0.411} \times 0.993^{\text{age}}$$

For P-Creatinine $> 80 \mu\text{mol/L}$

$$\text{eGFR (2009 CKD-EPI)}_{\text{Crea}} = 141 \times \left(\frac{\text{P-Crea}}{80} \right)^{-1.209} \times 0.993^{\text{age}}$$

The international recommended formulas for calculation of eGFR based on Creatinine and Cystatin C: "2012 CKD-EPI_{Crea-CysC}" formulas for persons >18 years:

Female:

For P-Creatinine $\leq 62 \mu\text{mol/L}$ and P-Cystatin C $\leq 0.8 \text{ mg/L}$:

$$\text{eGFR (2012 CKD-EPI)}_{\text{Crea-CysC}} = 130 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.248} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.375} \times 0.995^{\text{age}}$$

For P-Creatinine $\leq 62 \mu\text{mol/L}$ and P-Cystatin C $> 0.8 \text{ mg/L}$:

$$\text{eGFR (2012 CKD-EPI)}_{\text{Crea-CysC}} = 130 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.248} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.711} \times 0.995^{\text{age}}$$

For P-Creatinine $> 62 \mu\text{mol/L}$ and P-Cystatin C $\leq 0.8 \text{ mg/L}$:

$$\text{eGFR (2012 CKD-EPI)}_{\text{Crea-CysC}} = 130 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.601} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.375} \times 0.995^{\text{age}}$$

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

$$eGFR (2012\text{ CKD-EPI})_{Crea-CysC} = 130 \times \left(\frac{P-Crea}{62}\right)^{-0.601} \times \left(\frac{P-CysC}{0.8}\right)^{-0.711} \times 0.995^{age}$$

Male:

For P-Creatinine ≤ 80 µmol/L and P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{Crea-CysC} = 135 \times \left(\frac{P-Crea}{80}\right)^{-0.207} \times \left(\frac{P-CysC}{0.8}\right)^{-0.375} \times 0.995^{age}$$

For P-Creatinine ≤ 80 µmol/L and P-Cystatin C > 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{Crea-CysC} = 135 \times \left(\frac{P-Crea}{80}\right)^{-0.207} \times \left(\frac{P-CysC}{0.8}\right)^{-0.711} \times 0.995^{age}$$

For P-Creatinine > 80 µmol/L and P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{Crea-CysC} = 135 \times \left(\frac{P-Crea}{80}\right)^{-0.601} \times \left(\frac{P-CysC}{0.8}\right)^{-0.375} \times 0.995^{age}$$

For P-Creatinine > 80 µmol/L and P-Cystatin C > 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{Crea-CysC} = 135 \times \left(\frac{P-Crea}{80}\right)^{-0.601} \times \left(\frac{P-CysC}{0.8}\right)^{-0.711} \times 0.995^{age}$$

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

Female:

For P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{CysC} = 133 \times \left(\frac{P-CysC}{0.8}\right)^{-0.499} \times 0.996^{age} \times 0.932$$

For P-Cystatin C > 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{CysC} = 133 \times \left(\frac{P-CysC}{0.8}\right)^{-1.328} \times 0.996^{age} \times 0.932$$

Male:

For P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{CysC} = 133 \times \left(\frac{P-CysC}{0.8}\right)^{-0.499} \times 0.996^{age}$$

For P-Cystatin C > 0.8 mg/L:

$$eGFR (2012\text{ CKD-EPI})_{CysC} = 133 \times \left(\frac{P-CysC}{0.8}\right)^{-1.328} \times 0.996^{age}$$

**The international recommended formulas for calculation of eGFR based on Creatinine:
“2021 CKD-EPI_{Crea}” formulas for persons >18 years:**

Female:

For P-Creatinine ≤ 62 µmol/L:

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea}} = 142 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.241} \times 0.9938^{\text{age}} \times 1.012$$

For P-Creatinine > 62 µmol/L:

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea}} = 142 \times \left(\frac{\text{P-Crea}}{62} \right)^{-1.2} \times 0.9938^{\text{age}} \times 1.012$$

Male:

For P-Creatinine ≤ 80 µmol/L

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea}} = 142 \times \left(\frac{\text{P-Crea}}{80} \right)^{-0.302} \times 0.9938^{\text{age}}$$

For P-Creatinine > 80 µmol/L

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea}} = 142 \times \left(\frac{\text{P-Crea}}{80} \right)^{-1.2} \times 0.9938^{\text{age}}$$

**The international recommended formulas for calculation of eGFR based on Creatinine and Cystatin C:
“2021 CKD-EPI_{Crea-CysC}” formulas for persons >18 years:**

Female:

For P-Creatinine ≤ 62 µmol/L and P-Cystatin C ≤ 0.8 mg/L:

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.219} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.323} \times 0.9961^{\text{age}} \times 0.963$$

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

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.219} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.778} \times 0.9961^{\text{age}} \times 0.963$$

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

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.544} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.323} \times 0.9961^{\text{age}} \times 0.963$$

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

$$\text{eGFR (2021 CKD-EPI)}_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{62} \right)^{-0.544} \times \left(\frac{\text{P-CysC}}{0.8} \right)^{-0.778} \times 0.9961^{\text{age}} \times 0.963$$

Male:

For P-Creatinine ≤ 80 µmol/L and P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2021 \text{ CKD-EPI})_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{80}\right)^{-0.144} \times \left(\frac{\text{P-CysC}}{0.8}\right)^{-0.323} \times 0.9961^{\text{age}}$$

For P-Creatinine ≤ 80 µmol/L and P-Cystatin C > 0.8 mg/L:

$$eGFR (2021 \text{ CKD-EPI})_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{80}\right)^{-0.144} \times \left(\frac{\text{P-CysC}}{0.8}\right)^{-0.778} \times 0.9961^{\text{age}}$$

For P-Creatinine > 80 µmol/L and P-Cystatin C ≤ 0.8 mg/L:

$$eGFR (2021 \text{ CKD-EPI})_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{80}\right)^{-0.544} \times \left(\frac{\text{P-CysC}}{0.8}\right)^{-0.323} \times 0.9961^{\text{age}}$$

For P-Creatinine > 80 µmol/L and P-Cystatin C > 0.8 mg/L:

$$eGFR (2021 \text{ CKD-EPI})_{\text{Crea-CysC}} = 135 \times \left(\frac{\text{P-Crea}}{80}\right)^{-0.544} \times \left(\frac{\text{P-CysC}}{0.8}\right)^{-0.778} \times 0.9961^{\text{age}}$$

The European Kidney Function Consortium formulas for calculation of eGFR based on Creatinine: “2021 EKFC_{Crea}” formulas for persons >40 years:

Female:

For normalized P-Creatinine $\left(\frac{\text{P-Crea}}{62}\right) < 1.0$:

$$eGFR (EKFC)_{\text{Crea}} = 107.3 \times \left(\frac{\text{P-Crea}}{62}\right)^{-0.322} \times 0.990^{(\text{age}-40)}$$

For normalized P-Creatinine $\left(\frac{\text{P-Crea}}{62}\right) \geq 1.0$:

$$eGFR (EKFC)_{\text{Crea}} = 107.3 \times \left(\frac{\text{P-Crea}}{62}\right)^{-1.132} \times 0.990^{(\text{age}-40)}$$

Male:

For normalized P-Creatinine $\left(\frac{\text{P-Crea}}{80}\right) < 1.0$:

$$eGFR (EKFC)_{\text{Crea}} = 107.3 \times \left(\frac{\text{P-Crea}}{80}\right)^{-0.322} \times 0.990^{(\text{age}-40)}$$

For normalized P-Creatinine $\left(\frac{\text{P-Crea}}{80}\right) \geq 1.0$:

$$eGFR (EKFC)_{\text{Crea}} = 107.3 \times \left(\frac{\text{P-Crea}}{80}\right)^{-1.132} \times 0.990^{(\text{age}-40)}$$

History

January 2023	Responsible person changed
May 2023	The formulas have been updated to include 2021 CKD-EPI (Crea)
May 2024	The formulas have been updated to include 2021 EFKC (Crea)