

How to calculate Cockcroft-Gault CrCl using the MDCalc application

Example: consider two patients, patient A and B:

Patient	Sex	Age (years)	Weight (kg)	Creatinine ($\mu\text{mol/L}$)	Height (cm)
A	M	40	80	100	180
B	M	40	80	100	160

The parameters should be filled into the website <https://www.mdcalc.com/creatinine-clearance-cockcroft-gault-equation> as shown below and the results will display.

Patient A

Creatinine Clearance (Cockcroft-Gault Equation) ☆

Calculates CrCl according to the Cockcroft-Gault equation.

When to Use ▾
Pearls/Pitfalls ▾
Why Use ▾

Sex: Female Male

Age: years

Weight: kg ↕

Creatinine: $\mu\text{mol/L}$ ↕

The Cockcroft-Gault Equation may be inaccurate depending on a patient's body weight and BMI; by providing additional height, we can calculate **BMI** and provide a modified estimate and range.

Height: cm ↕

98 mL/min

Creatinine clearance, original Cockcroft-Gault

92 mL/min

Creatinine clearance for normal weight patient, using ideal body weight of 75 kg (165 lbs).

92.1–98.2 mL/min

Note: This range uses IBW and actual body weight. Controversy exists over which form of weight to use.

Copy Results 📄
Next Steps ➤➤

Patient B

Creatinine Clearance (Cockcroft-Gault Equation) ☆

Calculates CrCl according to the Cockcroft-Gault equation.

When to Use ▾
Pearls/Pitfalls ▾
Why Use ▾

Sex: Female Male

Age: years

Weight: kg ↕

Creatinine: $\mu\text{mol/L}$ ↕

The Cockcroft-Gault Equation may be inaccurate depending on a patient's body weight and BMI; by providing additional height, we can calculate **BMI** and provide a modified estimate and range.

Height: cm ↕

98 mL/min

Creatinine clearance, original Cockcroft-Gault

81 mL/min

Creatinine clearance modified for overweight patient, using adjusted body weight of 66 kg (145 lbs).

69.8–81.2 mL/min

Note: This range uses IBW and adjusted body weight. Controversy exists over which form of weight to use.

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Next Steps ➤➤

The calculator tell us the patient is of normal weight and therefore uses the Ideal Body weight	The calculator tells us the patient is overweight and therefore uses the adjusted body weight
Do you choose the CrCl value that uses the original equation, the adjusted weight or interpret the range?	
In most cases, the second answer (circled in the images above) which takes into account the patients height is the most accurate measure of renal function.	
<ul style="list-style-type: none"> - Ideal body weight should be used to calculate the CrCl. - Where the patient's actual body weight is less than their ideal body weight, actual body weight should be used instead. - For obese patients ideal body weight can be used, but some experts have suggested that an adjustment factor of 40% be applied to the patient's excess weight over their ideal weight i.e. adjusted ideal body weight = $[IBW + (0.4 \times ABW - IBW)]$. Clinical judgement is needed, e.g. if a patient's excess weight is due to high muscle mass not excess body fat, ABW should be used. - Others have proposed the use of a CrCl range for drug dosing purposes, with the lower boundary defined by using IBW in the C&G equation and the upper boundary by using actual body weight 	

Note: The MDcalc application uses the following:

Underweight	BMI <18.5	Calculation uses actual/total body weight (i.e., no adjustment)
Normal weight	BMI 18.5-24.9	Calculation uses ideal body weight, range uses actual body weight
Overweight / obese	BMI \geq 25	Calculation uses adjusted body weight, range uses ideal body weight