

**THE DIFFERENCE BETWEEN THE MDRD AND COCKCROFT & GAULT
METHODS FOR ESTIMATING GFR FROM SERUM CREATININE:
EFFECT OF BODY WEIGHT AND A SIMPLE METHOD FOR
RECONCILIATION.**

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Problem: Current guidelines recommend staging renal disease according to the KDOQI scale which is based on the body surface area (BSA)-corrected glomerular filtration rate (GFR) in ml/min/1.73m². Guidelines do not specify a particular method for calculating GFR, usually estimated from serum creatinine by various methods which do not necessarily agree. The two most commonly used methods are Cockcroft and Gault (C&G) and Modification of Diet in Renal Disease study (MDRD). Both employ the principle: clearance=generation rate divided by the concentration in serum. Varying creatinine generation rates in different patient groups is partly accounted for by inputs of age and sex. In addition, MDRD requires input of race (black/other) whereas C&G requires input of ideal weight (although actual body weight is usually used instead). MDRD is intended to estimate BSA-corrected GFR, whereas C&G is intended to predict creatinine clearance (not corrected for BSA). Despite these differences, both methods are used interchangeably.

In theory, C&G should return a BSA-corrected clearance, comparable to that calculated by MDRD, if a fixed weight of 62kg, (the weight of a person with ideal body mass index and surface area 1.73m²) instead body weight is input.

Purpose: To quantify the difference between the results of the MDRD and C&G methods and test the effect of using a fixed weight of 62Kg in the C&G method.

Design: 1109 patients attending the nephrology clinics in a large teaching hospital trust were studied. Clearance was calculated by different methods using the same data, once for each patient. The methods were MDRD, assuming non-black race, C&G using the actual body weight, measured in clinic and CG using 62Kg (regardless of actual weight).

Findings: Body weight ranged from 54 to 174kg. GFR calculated by MDRD ranged from 5 to 180 ml/min/1.73m². Clearance calculated by C&G with input of actual weight, was, on average, 27% higher than calculated by MDRD (mean absolute difference 33%). The difference depended on body weight and increased to 100%-200% in the heaviest patients. When a fixed 62Kg was used instead of body weight in C&G, the result agreed much more closely with MDRD. The mean difference fell to 0 and the mean absolute difference to 11%.

Conclusion: There are clinically significant differences between the C&G and MDRD methods. This difference is particularly great in heavier patients. The disagreement can be eliminated by using a fixed weight of 62kg, instead of actual body weight, in the C&G method.

Relevance: Timely referral of patients with renal disease would be assisted if the biochemistry laboratory reported estimated GFR automatically. Many UK laboratories cannot handle the power calculations required by the MDRD method. In this case, the C&G method using a fixed 62kg as weight is a practical alternative which gives comparable results.