Importance of the creatinine calibration in the estimation of GFR by MDRD equation

Sir,

We read with great interest the recent article by Van Biesen et al. [1] on the standardization of creatinine and the implications for chronic kidney disease (CKD) management. We fully agree with the general conclusions. However, we would like to make some comments about the methodology. Using correcting formulae to convert 'routine serum creatinine' to 'MDRD creatinine' is mandatory. Van Biesen et al. have thus used correction formulae and chosen those published by Froissart [2], Hallan [3] and Coresh [4]. However, we think that such correction formulae are only valid when applied to the respective creatinine methods used in these publications: modified kinetic Jaffé method after deproteinization (Bayer RA-XT, Konelab 20) for Froissart, blanked kinetic Jaffé (Roche Diagnostics, Hitachi 917) for Hallan and modified kinetic Jaffé (Boehringer Mannheim, Hitachi 737) for Coresh. It should also be stressed that Froissart and Coresh have directly recalibrated their creatinine values with the MDRD laboratory, Cleveland, while Hallan used an 'indirect' correction based on published data. In our University of Liège, we directly recalibrated our creatinine (rate-blanked compensated Jaffé method, Roche Diagnostics, Modular P analyzer) with the Cleveland laboratory (creatinine_{MDRD} = 1.003 \times \text{creatinine} + 0.1413) and we compared the results with those obtained by indirect correction based on data published by Hanser et al. [5] (creatinine_{MDRD} = 1.058 \times \text{creatinine} + 0.039). If both corrected creatinine are used with the simplified MDRD (for a white man of 60 years old), the differences between the calculated GFR values are greater than 5 ml/min/1.73 m² for serum creatinine concentrations below 0.89 mg/dl.

Problems linked to calibration may be overcome using a traceable (gold standard) serum creatinine assay.


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Reply

Sir,

This letter points out that indeed, while routine determination of renal function has been the orphan of renal scientific interest for many decades, its importance and relevance are being recognized at high speed, and alternatives are being considered by different investigators. I believe the points made in the letter are also presented in our article itself;