Reviewer's report

Title: Estimation of Glomerular Filtration Rate from Serum Creatinine and Cystatin C in Octogenarians and Nonagenarians

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Reviewer: Pierre Delanaye

Reviewer's report:

In their interesting study, Lopes et al studied the performances of different creatinine- and cystatin C-based equations in an elderly population. This topic is of highest importance and this specific population is frequently understudied. Of interest, the authors studied the performance of the new BIS equations which have been developed in an elderly population. The sample is adequate and the statistics are globally correct.

We have the following comments:

1) The major limitation is the absence of calibration for the cystatin C measurement. This is a very important limitation (White CA, CJASN, 2011 or Delanaye P, NDT, 2008) (Grubb A, CCLM, 2010). It could be also important to know when the cystatin C measurements have been performed (Larsson A Clin Chem, 2011).

2) We thus think the conclusions about the cystatin C (and combined)-based equations are questionable. Moreover, the authors should better separate the discussion between creatinine-based equations on one part and cystatin C- or combined equations on the other parts (and once again, the results of this second part are more difficult to interpret because this lack of cystatin C calibration). In this view, it appears that the BIS equation (based on creatinine only) outperforms both the MDRD and the CKD-EPI equations, especially in term of precision. This important result should be more emphasized.

3) Page 5, last line: the authors write that creatinine was measured with kinetic Jaffe colorimetric method” and Page 5, line 3 they write “Total CV of the enzymatic method…”. Please verify and correct.

4) Measurement of iohexol with the capillary electrophoresis method is not the most accurate (Bird NJ, Nephrol Dial Transplant, 2008, 23, p4078).

5) Please avoid terms like “tendency towards a statistically significant…”. Results are significant or not. Do not “overinterpret”.

6) Page 11, first paragraph about high prevalence of CKD (defined as eGFR<60 mL/min/1.73 m²). The major issue is not the high prevalence of CKD with the different equations. The major issue could be the definition of CKD (<60 mL/min/1.73 m²) itself in the elderly (Glassock RJ, NDT, 2008).

7) The following references should be cited and briefly discussed: Flamant M,

8) Table 1. Regarding the MDRD equation: if an IDMS creatinine has been used, the correct equation is the one with the coefficient “175” not “186”. This is crucial.

9) We recommend that eGFR should be reported and rounded to the nearest whole number.

10) Are the results still the same if the 7 black patients are excluded from the analysis?

11) Compared to the CKD-EPI cohort and even to the BIS cohort, these Brazilian subjects have lower BSA. What could be the consequences for the performance of the equations (as mGFR is indexed to BSA)?

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I have no conflict of interest to declare.