Reviewer's report

**Title:** Prevalence and Determinants of Chronic Kidney Disease in Community-Dwelling Elderly by Various Estimating Equations

**Version:** 1  **Date:** 7 January 2012

**Reviewer:** Benedicte Stengel

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The authors used a population-based survey to compare CKD stage 3-5 prevalence in the elderly using various GFR estimation equations and to study its determinants.

Interestingly, CKD-EPI estimated GFR provided higher CKD prevalence in this population than MDRD eGFR, a finding that may deserve further discussion considering the recent literature about the relative performance of these two equations.

- **Major Compulsory Revisions**

  1 - Methods, paragraph « Assessment of CKD »

  Regarding serum creatinine based MDRD eGFR equation, if serum creatinine is truly IDMS traceable, then the MDRD equation to be used should be that from Levey et al in Ann Int Med 2006, 145 :247, which is similar to that published in 1999 except that 186.3 is replaced by 175 at the beginning of the formula. This is a major issue because any change in creatinine assay and corresponding equation may have a major impact on MDRD eGFR values and thus on CKD prevalence estimate.

  2 - Methods, paragraph « Assessment of CKD », last line (page 6)

  Albuminuria is defined in the methods as an albuminuria > 20 mg/L, while in Table 2, albumin to creatinine ratio > 30 ug/mL (improper unit) was used. If urinary creatinine was available and ACR was used, values should be expressed in mg/g (or mg/mmol) creatinine and thresholds in the methods should be consistent with those used in the Table. Indicate definition of micro- and macroalbuminuria in Table 4 legend.

  3 - Statistical analysis

  Was Spearman coefficient correlation used for all variables or only for those which were not normally distributed? Were non normally distributed variables transformed before testing (e.g., albuminuria)?

  4 - Results, 3rd paragraph : Prevalence of overall albuminuria is different in the text as compared with Table 2, 9.9% vs 11.5%, probably because the first one includes participants with missing ACR values in the denominator while the second does not. The number of missing ACR should be mentionned in the
methods. It seems the total N population used to estimate prevalence in Table 2 is different for eGFR and ACR estimates. This should appear clearly.

5 – The authors may also provide estimate of CKD stage 1 and 2 prevalence.

5 – Results (last paragraph) and discussion/conclusion

The calculation of positive predictive values comparing eGFR defined CKD (Test) with albuminuria defined CKD (Disease) and the interpretation taken from these values are questionable. One cannot conclude that CysC-based eGFR is more « specific » than MDRD- or CKDEPI-based eGFR, simply because the prevalence of albuminuria is higher in participants classified as having eGFR < 60 mL/min/1,73 m² with the former than the two latters. Formally, the only method to assess the relative performance of eGFR equations is to compare each of them to GFR measured with a reference method. This has been the object of an abundant literature in the past 7 years. In this study, 31% of all participants with CysC-based eGFR < 60 mL/min/1,73 m² have albuminuria, but it is worth noting that only 32% of those with albuminuria also had low CysC-eGFR (calculated by combining Tables 2 and 4). In contrast, while only 19% of all participants with CKD-EPI-based eGFR < 60 have albuminuria, more than half (54%) of those with albuminuria have low CKD-EPI-based eGFR. This might as well be interpreted as evidence that CysC-based equation underestimates CKD prevalence! Overall, this study shows that 5.4% and 6.2% of all participants have both albuminuria and low eGFR using MDRD and CKD-EPI, respectively, but only 3.6% using CysC. Table 4 should show the distribution of albuminuria among the 2 groups of participants, with and without low eGFR.

The discussion and conclusion should also be modified to take these comments into account. Results from this study does not exclude the possibility that CysC-based eGFR overestimates GFR in the elderly. In this case, widely use of this equation may expose this population to drug overdosing and adverse effects.

6 – CKD-EPI was developed to correct for the underestimation of MDRD eGFR at low creatinine levels. Therefore, CKD-EPI eGFR values are expected to be higher than MDRD eGFR values, and consequently CKD prevalence is expected to be lower with CKD-EPI than MDRD. The reverse is observed here which would be worth discussing.

- Discretionary Revisions

7 - Results : In general, there is no need to repeat figures and p-values in the text when they are present in the Tables.

Minor issues not for publication

8 - Methods, Assessment of CKD, CKD-EPI eGFR : remove « a » in "max(SCr/k,1)a-1,209"

9 - Results, first paragraph : « A history of hypertension had more than half » is more likely to be « More than half had a history of hypertension ». 
10 - Table 3: last column (Hemoglobin) does not appear in the Table. Please check column width.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests