Reviewer's report

Title: Evaluation of cardiovascular disease burden and therapeutic goal attainment in US adults with chronic kidney disease: an analysis of National Health and Nutritional Examination Survey data, 2001-2010

Version: 1 Date: 2 January 2013

Reviewer: Delphine Tuot

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Comments to the Editor and Authors

Kuznik and colleagues demonstrate the high burden of cardiovascular disease and the relatively poor achievement of cardiovascular therapeutic goals in a nationally representative US population with chronic kidney disease. While these results are not groundbreaking or novel, this manuscript does add to the literature and highlights important gaps in CKD care that the medical community needs to address. Specific comments are listed below.

Major Compulsory Revisions:

1. Abstract: Analytic methods are not specified. The last sentence of the introduction addresses this partially and might be better placed in the Methods section of the abstract, with description of the analytic method used. Please reconcile the 9915 participants that were identified for the analysis (in the method section) with the 1428 (10.2%) participants with CKD. 1428 represents 10.2% of which cohort?

2. Abstract: In the methods section, when describing CKD stages, please use more simple descriptions that match those used in the manuscript (stage 3a: 45-59ml/min/1.73m2 and stage 3b: 30-44 ml/min/1.73m2).

3. Methods: The authors need to explain upfront why the analysis was restricted to NHANES participants with fasting labs. The current explanation is in the discussion section, which is much too late. Also, why was the fasting subsample of participants used to examine BP control and use of anti-hypertensive medications? I would think that the authors could use the entire subsample with CKD and medication/survey data for that analysis.

4. Methods: In the “Data collection” subsection, please clarify how drug utilization was self-reported. Was this based on the NHANES questionnaire or based on prescription bottles provided by the participant to the study staff? Also, the NCEP ATP guidelines for cholesterol level are based on CHD risk factors. Please describe what those risk factors are. Is CKD of any stage considered a CHD equivalent?

5. Methods: Given the current controversy re: blood pressure target among individuals with CKD, consider performing a sensitivity analysis using a BP goal of <140/90. Results: There must be a mistake in the first paragraph. 10.2% of
9915 is not 1428. Please reconcile. How many participants from the fasting subsample were excluded from the analysis because of missing data? What data are missing – renal status, medications, BP or laboratory results?

6. Results: In the first sentence of the third paragraph, please clarify which entities are CV co-morbidities and which entities are CV risk factors. Breaking this sentence up into 2 different sentences would be helpful. Also, change sentence structure such that the reader is reminded that CVD is defined by presence of CHD, CVA or CHF.

7. Results: Do the data in Tables 1-3 and Figure 1-2 pertain to the NHANES participants included in this study or are the data extrapolated to represent the US population? The title of each table should clarify whether or not these are population-level estimates.

8. Results: Are the data presented in Figure 1 the same as those in Table 2? If so, the figure is redundant.

9. Discussion: The authors spend too much time discussing statin use among patients with ESRD on dialysis. Given that the current study is restricted to individuals with non-dialysis requiring CKD, the discussion should focus on CKD. Results from the AURORA and ALERT trials are not pertinent to the analyses presented in this manuscript.

Minor Essential Revisions:
1. Methods: Please define stage 5 CKD in the “Sample Population” subsection.
2. Discussion: The authors state that 10.2% of NHANES survey participants have CKD, representing 22.6 million Americans. Why is this different from the “26 million affected by CKD” that is cited in the introduction? I believe that Coresh et al used NHANES in that analysis as well.

Discretionary Revisions:
1. Introduction: Suggest removing the sentence about non-traditional CV risk factors, as these are not addressed in the current analysis.
2. Results: Tables 2 and 3 -- consider including a column entitled “No CKD”. Then, the last several rows of Table 1 could be eliminated. Also, please clarify in the footnote how the p-values listed in the right-most column were determined. Consider calculating a non-parametric trend across all CKD categories.

Level of interest: An article of limited interest

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

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.