Reviewer's report

Title: A comparison of CKD-EPI estimated glomerular filtration rate and measured creatinine clearance in recently admitted critically ill patients with normal plasma creatinine concentrations.

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Reviewer: Barbara J Philips

Reviewer's report:

This is an interesting paper looking at the use of CKD-EPI in critically ill patients with presumed normal renal function. Over 100 patients were recruited and the target population was patients with normal serum creatinine concentrations and presumed normal renal function. The equation is compared with creatinine clearance measured over 8 hours. The authors conclude that CKD-EPI is not suitable for use in these patients and suggest that more creatinine clearance measurements should be done.

Major compulsory revisions

1. The limitations of 8 hour creatinine clearance as a comparator need be much more detailed. There are major problems with the use of creatinine clearances in patients with critical illness and this need to be better described.

2. Based on the 8 hour CrCl the authors have concluded that 48% of patients manifested augmented renal clearance. Although I agree this may be a useful construct, particularly when considering pharmacokinetics in critical illness, I suggest that augmented renal clearance and its clinical significance remain uncertain. Some of the limiting features of the 8 hour CrCl may falsely augment the value determined. This needs to be considered as a possible interpretation of the results.

3. These patients were recruited on admission to the intensive care. What mechanism of altered renal function accounts for the ARC in the early stages of critical illness?

4. Could the ARC be a manifestation of mathematical error caused by inaccuracies in the assays for serum and urine creatinine?

5. The secretion of creatinine in may be markedly altered in critically ill patients, perhaps affecting even the higher creatinine clearance calculations? What data is there to support the presumption it does not affect the calculation in this group of patients?

6. What was the effect of diuretics (frusemide or mannitol) on the measurements?

7. Unfortunately there remains no ‘gold standard’ for measuring GFR in AKI (or indeed in this case critical illness) and conclusions need to reflect this.

8. The conclusion that measured CrCl should be used has not been proven; only
that CKD-EPI does not perform well when measured against it.

Discretionary Revisions
1. In table 2; I am uncertain that listing the mean urine output, urinary creatinine and fluid balances for the whole cohort of patients contribute to our understanding of the data to the information

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

**Quality of written English:** Acceptable

**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'