Reviewer's report

Title: Estimation of glomerular filtration rate by a radial basis function neural network in patients with type-2 diabetes mellitus

Version: 3 Date: 26 May 2013

Reviewer: James Tattersall

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Many of my concerns have been addressed in this revision. However, my major concern remains.

It is not possible to reproduce or assess the validity and practicality of the neural network method used in this study. This is because the method is not explained adequately. The paper refers to a previous paper (ref 20), which describes the method and its validation. This paper was published only as an abstract and I have not been able to access it.

I am also not convinced that the 99mTc-DTPA renal dynamic imaging method is an adequate gold-standard for GFR. The author has provided some references to support its validity, but there are others which show that this method is not particularly accurate. Therefore, the 99mTc-DTPA renal dynamic imaging may be practical and adequate for clinical use, but still controversial and inadequate as a gold-standard in studies.

Finally, the results of the study show that the neural networks model provided better precision and accuracy (only) for some groups of patients than the estimation by the traditional MDRD equations. However there was increased bias. So, it seems that the neural networks method offers only marginal benefit compared to the MDRD method for estimating GFR. I expect that it would be more complicated to apply the neural networks method than the MDRD method. It is not clear whether the benefits justify any increased complexity.

Level of interest: An article of limited interest

Quality of written English: Not suitable for publication unless extensively edited

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