Reviewer's report

Title: The Chronic Kidney Disease Model: A General Purpose Model of Disease Progression and Treatment

Version: 1 Date: 7 March 2011

Reviewer: Maarten Taal

Reviewer's report:

Major Compulsory Revisions:
1. Several of the assumptions used in the model do not appear to be compatible with published data.
2. In Table 1, the prevalence of proteinuria is 100% for CKD stages 1 and 2, and close to 50% from stages 3-5. The 100% prevalence is based on NHANES data but in this survey CKD stages 1 and 2 were defined only on the basis of albuminuria. The KDOQI definition includes other manifestations of kidney damage including hematuria and renal scarring. Thus the prevalence of proteinuria in CKD stage 1-2 is very unlikely to be 100%. Even the prevalence of proteinuria in CKD stages 3-5 is considerably higher that in the CRIC study (Lash JP et al. Clin J Am Soc Nephrol. 2009 Aug;4(8):1302-11).
3. Similarly the prevalence of diabetes in each of the stages of CKD in Table 1 seems too high. The 2010 USRDS report shows a prevalence of diabetes of 49.4% for CKD stages 3-5. The value of 78% for prevalence of diabetes in CKD 5 seems much too high.
4. The relative proportion of patients with each stage of CKD seems substantially different from that reported in reference 19 (NHANES): CKD 1 -30.3%; CKD 2 -27.2%; CKD 3 -39%; CKD 4 -2.6%; CKD 5 -1.5%
5. The monthly changes in GFR shown in Table 2 seem extremely implausible. All of the values seem too high. The authors quote data from the AASK study that reported a mean rate of GFR decline of just 1.7ml/min/year. Thus the monthly values of -4.4 to –25 seems excessive.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.