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Calculation of glomerular filtration rate using serum cystatin C in kidney transplant recipients

Kidney International (2006) **70,** 1878. doi:10.1038/sj.ki.5001843

To the Editor: Recently, Rule *et al.*[1] demonstrated a 19% higher glomerular filtration rate at the same cystatin C (Cys C) level among patients after renal transplantation in comparison to patients with native kidney disease. Thus, a new Cys C-based formula (glomerular filtration rate-$76.6 \times \text{Cys C}^{-1.16}$) was suggested for transplant recipients (TX formula). We analyzed the diagnostic performance of the new TX formula in comparison to two other Cys C formulae (Larsson and Hoek[2,3]) which are based on the same Cys C assay in a cohort of 108 patients after renal transplantation. Glomerular filtration rate was determined by ^{99m}technetium-labeled diethylenetriamine penta acetate clearance. Results are given in Table 1.

Although the Larsson and Hoek formulae were not derived from a transplanted cohort, their diagnostic performances are at least comparable to the TX equation. Thus, two conclusions can be drawn from this analysis: (1) calibration differences between the different laboratories may counteract the putative advantages of the new TX formula, (2) this rather disappointing performance of the TX equation may also be due to possible confounders like steroid dosing which may crucially affect Cys C levels.[4]

To enhance the performance of future Cys C-based glomerular filtration rate equations such cofactors should be taken into account.

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Response to 'Calculation of glomerular filtration rate using serum cystatin C in kidney transplant recipients'

Kidney International (2006) **70,** 1878–1879. doi:10.1038/sj.ki.5001828

We appreciate the work by Pöge *et al.*[1] to test the performance of our transplant equation.[2] Remarkably, the equation performed well with little bias (−1.6 ml/min/1.73 m^2) in their transplant recipients. There was also little bias with the Larsson[3] and Hoek[4] equations, which were not specifically developed using transplant recipients. However, we note that our finding of a higher glomerular filtration rate (GFR) in transplant recipients (kidney or other organ) compared to native chronic kidney disease (CKD) patients is consistent with reports by other investigators.[5,6] In these centers, one equation cannot accurately estimate GFR in both transplant and native CKD patients unless it includes variables for transplant

Table 1 | Comparison of performance of the different cystatin C based formulae

	Mean estimates (ml/min/1.73 m^2)	Range (ml/min/1.73 m^2)	Correlation coefficient	Bias (ml/min/1.73 m^2)	Median difference (ml/min/1.73 m^2)	Precision (ml/min/1.73 m^2)	Accuracy within 30% (95% CI)	Accuracy within 50% (95% CI)
DTPA	39.5	11.8–82.9						
Larsson	36.3	7.78–104	0.859	−3.20	−4.78	9.59	77.1	95.4
Hoek	38.9	8.72–97.4	0.865	−0.58	−1.50	8.64	77.1	97.2
Rule	37.9	9.30–101	0.862	−1.60	−2.78	9.15	78.0	89.0

CI, confidence interval; DTPA, diethylenetriamine penta acetate.