PERFORMANCE OF CURRENT EQUATIONS FOR ESTIMATION OF GFR IN DIFFERENT STAGES OF CKD AMONG RENAL TRANSPLANT RECIPIENTS

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CKD is common in renal transplant recipients. **Our aim** is to determine the accuracy of current GFR prediction equations in different stages of CKD among renal transplant recipients. The study included 305 GFR measurements (mean 2 measurements/patient) by the urinary clearance of inulin performed in 124 adult renal transplant recipients. There were 83 males and 41 females with a median age of 46 years (range 19-72 years), 64 African-American, 60 Caucasian. Their mean body weight was 85 ± 2 Kg, BSA average 1.97 ± 0.02 m^2; BMI was 28.8 ± 0.6 Kg/m^2. Serum creatinine ranged from 0.7-8.2 mg/dl with a mean of 2; mean GFR was 38 ml/min/1.73m^2, with a range of 5-100. The distribution of CKD stages were Stage 1(n=3), Stage 2 (n=29), Stage 3 (n=161), Stage 4 (n=87), Stage 5 (n=25). We evaluated the MDRD, aMDRD, Walser, Nankivell, Mayo Clinic, and Cockroft Gault formulae. The accuracy of different eGFR prediction equations according to CKD stages are shown in the table below:

	Within ±30% error in stage 2	Within ±30% error in stage 3	Within ±30% error in stage 4	Within ±30% error in stage 5
Nankivell	79%	49%	9%	0%
MDRD	72%	64%	38%	8%
Walser	67%	58%	34%	8%
aMDRD	66%	58%	37%	8%
Cockcroft-Gault	62%	44%	9%	4%
Mayo Clinic	48%	44%	48%	12%

Summary: Current eGFR equations have poor accuracy in renal transplant recipients in the US. The accuracy worsened for all equations as kidney disease becomes more severe. We conclude that direct measurement of GFR is needed, or a new equation must be developed to accurately estimate glomerular function in renal transplantation.