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Abstract (publication only)

**Quantifying the incidence and severity of acute renal failure among HIV-infected adults receiving tenofovir-based antiretroviral therapy**

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Objectives: 1) Quantify incidence of acute renal failure (ARF), 2) Classify severity of ARF & 3) Determine predictors of ARF. Methods: A retrospective cohort study was performed among patients receiving tenofovir (TDF) at the Albany Medical Center between Jan 2007 and Jul 2011. Inclusion criteria were: i) age  $\geq$  18 years, ii) HIV-infection, iii) receipt of TDF for  $\geq$  1 month, and iv) availability of laboratory results to classify outcome status. Trained reviewers extracted the following from the patients' medical records: demographics, comorbid conditions associated with chronic kidney disease (CKD), serum creatinine (SCr), CD4 count, HIV RNA, and medication histories. Creatinine clearance (CLCR) was calculated using the Cockcroft-Gault method. ARF was defined and classified using criteria proposed by the Acute Dialysis Quality Initiative Group as follows: Risk (SCr increase  $\times$  1.5 or CLCR decrease  $>$ 25%), Injury (SCr increase  $\times$  2 or CLCR decrease  $>$ 50%) and Failure (SCr increase  $\times$  3 or CLCR decrease  $>$ 75%). Logistic regression was utilized to determine the variables independently associated with each ARF classification. Results: There were 298 patients that met inclusion criteria. There were 173 (58.1%) males. The mean (SD) age at the start of TDF was 48.5 (9.0) years. The median (IQR) SCr and CLCR values were 0.9 (0.8 – 1.1) mg/dL and 95 (78 – 110) mL/min, respectively. Concomitant nephrotoxins were used in 71 (23.8%) patients. The incidence of ARF was 22.8% during the study period. The number of patients that satisfied the Risk, Injury and Failure classification criteria were 68 (22.8%), 21 (7.0%) and 12 (4.0%), respectively. In bivariate analyses, variables associated with ARF-Risk were underlying CKD, concomitant abacavir use, and duration of TDF. Variable associated with ARF-Injury classification are displayed in Table 1. There were no variables significantly associated with the Failure classification. In multivariate (MV) analyses assessing ARF-Risk as the outcome of interest, underlying CKD was the only independent predictor variable (OR = 3.93, 95% CI: 1.44 – 10.73,  $p$  = 0.008) after adjusting for duration of TDF use. In MV analyses assessing ARF-Injury as the outcome, independent predictor were CKD (OR = 4.38, 95% CI: 1.31 – 14.62,  $p$  = 0.02) and hypertension (OR = 3.69, 95% CI: 1.34 – 10.13,  $p$  = 0.01). Conclusion: The incidence of ARF varies as a function of severity. Underlying CKD and hypertension are important variables when predicting severity of ARF.

**Table 1: Variables Associated with Acute Renal Failure – Injury Classification (SCr increase x 2 or CLCR decrease >50%)**

Covariate	Injury (n = 21)	No Injury (n = 277)	P-value
Race:			0.13
• White	7 (33.3)	132 (47.7)	
• Black	13 (61.9)	103 (37.2)	
• Hispanic	1 (4.8)	24 (8.7)	
• Other	0 (0)	18 (6.5)	
Males	13 (61.9)	160 (57.8)	0.71
Diabetes mellitus	3 (14.3)	28 (10.1)	0.47
Hypertension	15 (71.4)	97 (35.0)	0.001
Chronic Kidney Disease	5 (23.8)	12 (4.3)	<0.001
Concomitant Nephrotoxins	9 (42.9)	62 (22.4)	0.03
Median (IQR) TDF duration (months)	30 (23 – 34)	26 (15 – 36)	0.04
Concomitant Protease Inhibitors	17 (81.0)	156 (56.3)	0.04

All data presented as n (%), unless otherwise noted