Risk Implications of 5 Different Formulas for Renal Function in Patients with NSTE-ACS

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Background: Antecedent renal insufficiency (RI) is an established prognostic predictor of cardiovascular events. Several formulas to estimate glomerular filtration rate (eGFR), as a proxy of renal function, are available, each with its potential strengths and flaws, although their relative implication on long-term outcome among patients with non ST elevation acute coronary syndrome (NSTEACS) remains unknown. Finding the proper prognosticator is important given the high event rates in the first year after NSTEACS.
Aim: To assess the risk implications of 5 eGFR formulas among patients admitted with NSTEACS.
Methods: We examined NSTEACS patients from 5 consecutive, biennial surveys of acute coronary syndromes in Israel between the years 2002-2010. We compared the implications of 5 different eGFR formulas, based on the initial serum creatinine level, on 1-year mortality: chronic kidney disease epidemiology collaboration (CKD- EPI), modification of diet in renal disease (MDRD), Mayo quadratic (MAYO), Inulin clearance based (IB), and Cockcroft-Gault (CG) formula.
Results: Of the 4876 NSTEACS patients (75.8% men, mean age 65.1±12.6 years), 1782 (36.5%) had unstable angina pectoris, and the remaining myocardial infarction. The prevalence of antecedent RI, defined as eGFR<60 ml/minute/1.73m2, varied considerably, yet mortality was higher among RI patients using all formulas except CG (Table). On multivariate analysis, GFR based on all formulas, except CG, was a predictor of 1-year mortality (Table).
Conclusion: Although the prevalence of RI varies considerably among NSTEACS patients based on the formula used, for all formulas except CG, RI patients fared significantly worse. The CG formula, commonly used and advocated, may not be a good surrogate of long-term outcome among NSTEACS patients.

	RI+		RI-		p-value for 1-year mortality	Hazard Ratio (95% CI)
	Frequency %	1-Year Mortality %	Frequency %	1-Year Mortality %		
CKD-EPI	35.2	19.5	64.8	3.8	<0.001	0.97 (0.96-0.98)
MDRD	32.8	20.2	67.2	4.1	<0.001	0.98 (0.97-0.99)
MAYO	22.0	24.5	78.0	5.1	<0.001	0.97 (0.97-0.98)
IB	35.2	19.6	64.8	3.6	<0.001	0.98 (0.97-0.99)
CG	20.0	8.3	80.0	9.8	0.22	1.00 (0.99-1.01)