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eGFR, albuminuria predict CV and all-cause death

JUNE 9, 2010 | Laurie Barclay

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Adapted from Medscape Medical News—a professional news service of WebMD

Baltimore, MD - Both estimated glomerular filtration rate (eGFR) and albuminuria independently predict all-cause and cardiovascular mortality, according to the results of a large, global collaborative meta-analysis including more than a million subjects reported in the June 12, 2010 issue of the *Lancet* [1].

"Substantial controversy surrounds the use of estimated glomerular filtration rate and albuminuria to define chronic kidney disease and assign its stages," write Dr Josef Coresh (Johns Hopkins Bloomberg School of Public Health in Baltimore, MD) and colleagues. "We undertook a meta-analysis to assess the independent and combined associations of eGFR and albuminuria with mortality."

The investigators pooled standardized data for all-cause and cardiovascular mortality from studies enrolling at least 1000 participants for whom baseline data were available for eGFR and urine albumin concentrations. Urine albumin-to-creatinine ratio (ACR) was measured in 14 studies enrolling a total of 105 872 participants (730 577 person-years), and urine protein was measured by dipstick in seven studies enrolling a total of 1 128 310 participants (4 732 110 person-years).

Risk for mortality was unrelated to an eGFR between 75 mL/min/1.73 m² and 105 mL/min/1.73 m² but increased at lower eGFRs.

Adjusted HRs for all-cause mortality vs an eGFR of 95 mL/minute/1.73 m²

eGFR (mL/min/1.73 m ²)	Adjusted HR (95% CI)
60	1.18 (1.05-1.32)
45	1.57 (1.39-1.78)
15	3.14 (2.39-4.13)

By contrast, ACR was linearly associated with the risk for mortality without threshold effects, with mortality higher at progressively higher ACR.

Adjusted HRs for all-cause mortality vs an ACR of 0.6 mg/mmol

ACR (mg/mmol)	Adjusted HR (95% CI)
1.1	1.20 (1.15-1.26)
3.4	1.63 (1.50-1.77)
33.9	2.22 (1.97-2.51)

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Results were very similar for cardiovascular mortality, the authors note, and in studies with dipstick measurements of urine protein. Of note, ACR and eGFR appeared to have separate effects on mortality risk, with no evidence for interaction, suggesting that their effects are additive.

"eGFR less than 60 mL/min/1.73 m² and ACR 1.1 mg/mmol (10 mg/g) or more are independent predictors of mortality risk in the general population," the study authors write. "This study provides quantitative data for use of both kidney measures for risk assessment and definition and staging of chronic kidney disease."

In an accompanying comment, Dr Giovanna Leoncini (University of Genoa, Italy) and colleagues note that these findings have prompted plans for revisions of global chronic kidney disease guidelines [2].

"Data from [this] meta-analysis confirm beyond doubt that the current thresholds are indicative of increased all-cause and cardiovascular mortality risk," the editorialists write. "Therefore, the study by the Chronic Kidney Disease Prognosis Consortium will hopefully promote greater use of renal-function tests in clinical practice aimed at global risk assessment."

The complete contents of Medscape Medical News, a professional news service of WebMD, can be found at www.medscape.com, a website for medical professionals.

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Sources

1. Chronic Kidney Disease Prognosis Consortium. Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: A collaborative meta-analysis. *Lancet* 2010; 375:2073-2081.
2. Leoncini G, Vlazzi F, Pontremoli R. Overall health assessment: a renal perspective. *Lancet* 2010; 375:2053-2054.

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- Role of kidney disease on CV outcomes underappreciated [*Brain/Kidney/Peripheral* > *Brain/Kidney/Peripheral*; Apr 09, 2010]
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- Any degree of albuminuria signals increased cardiovascular risk [*Lipid/Metabolic* > *Lipid/Metabolic*; Nov 20, 2007]
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