RISK FACTORS

# Cystatin C and albuminuria predict mortality in diabetes

A new study by de Boer and colleagues demonstrates that albuminuria and impaired glomerular filtration rate (GFR) are independent and additive risk factors for mortality in older adults with diabetes. As de Boer explains, "…our findings suggest that measurements of urine albumin and impaired kidney function may best be used in combination to determine the health risk associated with kidney disease [in these patients]".

Kidney disease has long been known to be a risk factor for poor outcomes in individuals with diabetes; however, the association of albuminuria and impaired GFR with mortality in these patents is not well understood. The researchers of the current study wanted to investigate how different assessments of kidney function related to outcomes in patients with diabetes and which assessment was most strongly related to mortality in these patients. To achieve this goal, the researchers first assessed the association of albuminuria and reduced GFR with all-cause and cardiovascular-specific mortality in participants from the Cardiovascular Health Study. All patients had diabetes at baseline and the mean age of participants at this time was 77 years.

The researchers found that elevated urine albumin and impaired kidney function, as indicated by reduced GFR, were each independently associated with an increased risk of both all-cause and cardiovascular mortality. Moreover, the association of albuminuria and reduced GFR with mortality risk was found to be additive. As de Boer explains "…having either manifestation of kidney disease is associated with equally poor outcomes, and having both manifestations is worse".

The researchers compared the ability of GFR estimates from serum creatinine levels and from serum cystatin C levels to predict mortality. They found that GFR estimated from serum cystatin C levels was a better predictor of mortality than GFR estimated from serum creatinine. The researchers stress, however, that their findings do not make a case for the clinical use of cystatin C levels for the assessment of mortality risk at this time, because factors such as the reproducibility and reliability of their findings require further evaluation.

According to de Boer, the findings from this study indicate that elevated urine albumin and impaired kidney function
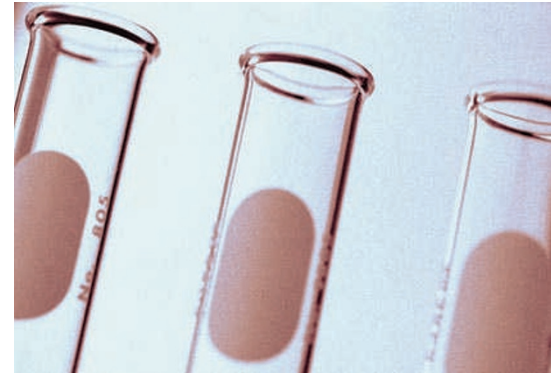
may represent subtly different disease processes that could be treated with different interventions. The researchers hope to investigate this hypothesis by assessing the association of cardiovascular risk factors with elevated urine albumin and impaired kidney function. They also plan to investigate the differential effects of interventions on these manifestations of kidney disease.

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Original article de Boer, I. H. *et al.* Cystatin C, albuminuria, and mortality among older adults with diabetes. *Diabetes Care* **32**, 1833–1838 (2009)