

## Low Glomerular Filtration Rate Is Associated with Future Stroke

*Risk for stroke was 43% higher among people with renal insufficiency.*

Chronic kidney disease (CKD) is associated with elevated risks for coronary heart disease, cardiovascular mortality, and all-cause mortality. The association between low glomerular filtration rate (GFR) and stroke, however, is less clear. In this meta-analysis, investigators explored the association between baseline GFR and future stroke.

Twenty-one articles, derived from 33 prospective studies that involved 285,000 participants, were included in the meta-analysis. In all included studies, investigators adjusted for potential confounding variables. Overall, 7863 stroke events occurred (follow-up range, 3.2–15 years). Risk for stroke was 43% higher among participants with GFRs  $<60$  mL/minute/1.73 m<sup>2</sup> than among those with normal GFRs. Risk for stroke, however, was not elevated among participants with GFRs of 60 to 90 mL/minute/1.73 m<sup>2</sup>.

**Comment:** A baseline GFR  $<60$  mL/minute/1.73 m<sup>2</sup> is associated with risk for future stroke. Notably, these results are at odds with those of a recently published population-based prospective study that showed no association between CKD and stroke ([BMJ 2010; 341:c4986](#)). The results of the meta-analysis are more convincing, given the enormous number of participants involved and the known association between CKD and vascular disease. Nevertheless, the meta-analysis results do not establish causality; low GFR could simply be a marker of elevated stroke risk and not a cause.

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