

Medical Flashlight

Title **Homocysteine as a risk factor for cardiovascular disease in patients treated by dialysis: A meta-analysis**

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Introduction The average total homocysteine (tHcy) level in the general population is about 10 to 15 µmol/L, in patients with end-stage renal disease 25 to 35 µmol/L. Although tHcy level has been identified in the general population in various meta-analyses as a risk factor for cardiovascular disease (CVD) and mortality, no such systematic analysis has been carried out for dialysis patients.

Material and Methods The present meta-analysis was carried out in studies with HD and PD patients. Separate assessments were made for 3 different study designs: retrospective studies, prospective observational studies and intervention studies.

Type of study	Target	Number of studies	Number of patients	Countries
Retrospective studies	Association between tHcy and CVD or mortality	11	1506	US/Canada: 5 Europe: 4 Japan: 2
Prospective observational studies	Association between tHcy and CVD or mortality	12	1975	Europe: 7 Japan: 1 US/Canada: 4
Intervention studies	Influence of folic acid, vitamin B ₆ and vitamin B ₁₂ on CV or mortality risk	5	1642	US: 2 Italy: 2 Brazil: 1

Results and Conclusions

- In retrospective studies, there was no significant overall difference in tHcy between cases and controls.
- The pooled overall risk estimate for prospective observational studies suggested no association between tHcy and total mortality (hazard ratio [HR], 1.02; 95% CI, 0.93 to 1.12; p = 0.7), but there was an association with CV events (HR, 1.09; 95% CI, 1.03 to 1.14; p = 0.001). In subgroup analysis of patients not receiving vitamins, an increase in tHcy level was associated with increased mortality (HR, 1.07; 95% CI, 1.02 to 1.13; p = 0.01).
- For intervention trials with B vitamins, there was a significant risk reduction for CVD (relative risk, 0.73; 95% CI, 0.56 to 0.94; p = 0.02), but not total mortality or the composite end point (CVD and total mortality).
- tHcy level may be a risk factor for CV events and total mortality in dialysis patients not receiving vitamin supplementation or folic acid food fortification.

Comments *Many studies were small; some intervention studies were neither placebo controlled nor randomized.*