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401

**MORTALITY RISK WITH SERUM PHOSPHOROUS IN TWICE WEEKLY VS. THRICE WEEKLY HEMODIALYSIS PATIENTS:**

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Patients on dialysis commonly have abnormally elevated serum phosphorous levels. Both high and low serum phosphorous have been associated with greater risk of mortality in thrice weekly incident hemodialysis (HD) patients. However, less is known about this relationship in patients undergoing twice weekly HD. This study examines the phosphorous-mortality relationship in twice weekly compared to thrice weekly HD patients.

From a large national dialysis cohort of incident hemodialysis patients (2007-2011), we identified 78,849 thrice weekly and 3,989 twice weekly HD patients. For each dialysis type, patients were divided into four groups of phosphorous levels: <3.5, 3.5-<5.5 [ref], 5.5-<7 and ≥7 mg/dl. We examined the association of phosphorous levels and all-cause mortality using Cox models adjusted for case-mix and markers of malnutrition and inflammation.

In thrice and twice weekly respectively, the mean age was 63±15 and 68±14 and consisted of 43% and 47% females, 31% and 15% African Americans. Higher phosphorous was associated with a higher mortality risk in both twice and thrice weekly patients, however the risk appeared stronger for twice weekly. Lower phosphorous was not associated with any difference in mortality risk compared to the reference in thrice weekly patients, while it appeared to trend toward lower mortality risk in twice weekly HD patients. The p-for-interaction was 0.02 indicative of a significant effect of dialysis type on the phosphorous-mortality relationship.

Relationship of phosphorous and mortality differs in patients receiving twice and thrice weekly HD treatment. Patients with lower phosphorous levels receiving twice weekly HD treatment overall had lower mortality rates compared to thrice weekly HD patients, while higher phosphorous was associated with higher mortality risk in twice versus thrice weekly HD patients. Future studies should examine if treatment addressing serum phosphorous level management should be modified according to dialysis schedules.

