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**HYPOMAGNESEMIA AND RISK OF ALL-CAUSE MORTALITY IN USA MAINTENANCE HEMODIALYSIS PATIENTS.**

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Low serum magnesium (Mg) level has been associated with increased risk of diabetes mellitus, hypertension, and cardiovascular diseases in the general population. Prior observational studies have shown hypomagnesemia was associated with increased all-cause mortality in hemodialysis (HD) patients. However, these studies were limited by short follow-up, failure to account for Mg changes over time, and lack of generalizability to the US population. We hypothesize that low serum Mg is associated with increased risk of death.

In a US cohort of 9,359 HD patients who initiated dialysis between 2007-2011, we examined the association of serum Mg with all-cause mortality using multivariable adjusted time-varying Cox proportional hazards models. After a follow-up of 19 ±15 (mean ±SD)

months, 2,636 deaths occurred. Compared to serum Mg 2.2-<2.4 mg/dl (ref.), patients with Mg <2 mg/dl had a significantly higher risk of all-cause mortality over time after adjustment for baseline characteristics and co-morbidities. Associations were attenuated to the null after additional adjustments for other routine laboratory measurements especially serum albumin. Among patients with low albumin <3.5 g/dl (n=4,066), low Mg <2 mg/dl (vs. Mg ≥2 mg/dl) was associated with additional 17% higher risk for death (hazard ratio 1.17, 95% CI: 1.05-1.31, p=0.004).

Hence, in a large US cohort of HD patients, lower serum Mg was significantly associated with increased all-cause mortality, especially in patients with low serum albumin. These findings may help identify HD patients with higher mortality risk for potential interventions.

