

## **Hemodialysis treatment time versus erythropoietin dose requirement: Reduction in 2,000 units per week by extension of hemodialysis for 1 hour .**

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### **Abstract**

**INTRODUCTION:** High-dose erythropoietin (EPO) administration to hemodialysis (HD) patients with EPO hyporesponsiveness, due to iron deficiency, hyperparathyroidism, malnutrition, inflammation, and inadequate HD, results in increased risk of mortality and cardiovascular events. We investigated the relationship of the EPO dose requirement with 4-, 5-, and 6-hour HD treatment times.

**MATERIALS AND METHODS:** This cross-sectional study enrolled 300 HD patients, including those on 4-hour HD (n = 78), 5-hour HD (n = 106), and 6-hour HD (n = 116). We studied the following parameters: weekly EPO dose, hemoglobin (Hb), serum ferritin, Kt/V, membrane surface area, quantity of blood flow, quantity of dialysate flow, age, HD vintage, serum albumin, C-reactive protein (CRP), intact parathyroid hormone (iPTH), and  $\beta$ 2-microglobulin. These parameters were analyzed with JMP9™ statistical software.

**FINDINGS:** The EPO requirement (units per week) of the 6-hour HD group ( $4,035 \pm 269$ ) was significantly lower than that of the 5-hour HD group ( $6,628 \pm 630$ ), which was significantly lower than that of the 4-hour HD group ( $8,567 \pm 684$ ). The Hb level, mean corpuscular volume, quantity of blood flow, quantity of dialysate flow, age, gender, ratio of diabetic patients, body mass index, dry weight, CRP, iPTH, use of antiplatelet agents and anticoagulants were not significantly different among the three groups. Multiple regression analysis with the weekly EPO requirement as the dependent variable showed HD treatment time ( $p < 0.0001$ ) and CRP level ( $p < 0.001$ ) as the significant independent variables.

**DISCUSSION:** The EPO dose can be reduced by ~ 2,000 U/week by extending the HD treatment time for 1 hour; annual cost savings were calculated to be USD 570 per patient. .