

ASN 2009 Abstract

Nocturnal Hemodialysis improves Hemoglobin Sensitivity to Erythropoietin Therapy

Linda Francisco, MD¹, Robert I. Lynn, MD², Tom Gill, MBA¹, Shane Simon¹, Abbe Volz¹, Karen Spach, PhD¹, Ronald Levine, MBA¹, Robert Provenzano, MD¹

(1), DaVita Inc., Lakewood, CO, (2) Nephrology & Hypertension Associates, Bronx, NY

Introduction: Despite the important clinical and economic consequences of hypo-responsiveness to erythropoiesis stimulating agents (ESA), few interventions are available to improve ESA sensitivity in dialysis patients.

Methods: To test the hypothesis that an increase in dialysis treatment time on nocturnal hemodialysis (NHD) improves sensitivity to ESA, we compared Hb and ESA doses in 315 patients 6 months before and 9 months after converting from conventional in-center hemodialysis (ICHD), 3-4 hour sessions, 3x/wk, to NHD, 6-8 hour sessions, 3x/wk. We defined ESA sensitivity as (Hb_o / ESA_{mo}), where Hb_o = the observed Hb at the end of the time periods evaluated, and ESA_{mo} = Total epoetin alpha over a 4 week time period starting 28 days prior to Hb_o (units (U)/patient/month).

Results: ESA administration decreased from a baseline of 19845 ± 695 U/patient/week, to final 17457 ± 695 U/patient/week ($p < 0.0001$). Hb levels declined from baseline 12.2 ± 0.1 g/dl to final 12.1 ± 0.1 g/dl ($p < 0.05$). Iron sucrose administration declined from baseline 248 ± 16 mg/patient/month to final 218 ± 14 mg/patient/month ($p < 0.05$). Overall, ESA sensitivity increased from baseline $5.04 \times 10^{-4} \pm 7.16$ Hb_o / ESA_{mo} to final $5.24 \times 10^{-4} \pm 6.11$ Hb_o / ESA_{mo} ($p < 0.05$).

Conclusion: Our findings in a large longitudinal cohort of NHD patients confirm that increased dialysis time on NHD is associated with improved sensitivity to anemia therapy. Lower utilization of both ESA and IV iron with no clinically significant change to Hb outcomes suggests that these results may have both clinical and economic benefits.