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It is time to consider individualized treatment goal for anemia in ESRD

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Objectives: We investigated an allowable upper limit of hemoglobin (hgb) level for ESA therapy in ESRD using Korean Society of Nephrology (KSN) ESRD registry.

Methods: We review the data from KSN ESRD registry between January 2010 and December 2017. Among 78,409 hemodialysis patients registered, we enrolled the patients who were 19 years or older, measured serum hgb twice or more, and were followed up clinically for more than 12 months.

Results: Finally, 26,910 patients were analyzed and their mean follow-up duration was 4.78 ± 2.14 years. During the follow-up period, 3,133 (11.6%) patients died and 11,132 (41.4%) patients admitted to hospital. The patients were assigned to the six groups according to their initial Hgb levels: group 1 < 8, $8 \leq$ group 2 < 9, $9 \leq$ group 3 < 10, $10 \leq$ group 4 < 11, $11 \leq$ group 5 < 12, group 6 \geq 12 g/dL. Those with higher hgb level were more likely to be young and men, to have higher levels of albumin, calcium, phosphorous, and uric acid. They also tended to use lesser amount of erythropoiesis-stimulating agents (ESAs). After multiple logistic regression of variables related to hospitalization, we found that group 6 had lower risk for hospitalization in patients with following characteristics: male, chronic glomerulonephritis, $1 \leq$ dialysis vintage < 5 years, and dialysis vintage \geq 10 years. Regarding mortality, we demonstrated similar results after multiple cox regression analysis.

Conclusions: Although there were several limitations associated with retrospective study, we observed that higher hgb levels would be beneficial in certain patients.