



1725 I Street NW • Suite 510 • Washington, DC 20006
Tel 202-659-0599 • Fax 202-659-0709 • www.asn-online.org

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Contact: Shari Leventhal: 202-416-0658, sleventhal@asn-online.org

NEW ANEMIA MEASURE PREDICTS RISK OF DEATH IN DIALYSIS PATIENTS

Washington, DC (Tuesday, November 13, 2007) — A new indicator of variations in hemoglobin level over time is a strong predictor of the risk of death among patients receiving dialysis for end-stage renal disease (ESRD), reports a study in the December *Journal of the American Society of Nephrology*.

"Hemoglobin variability—a measure of the stability of levels of hemoglobin among chronic hemodialysis patients—provides a novel way of thinking about and understanding the relationship between anemia and outcomes in ESRD," comments Dr. Harold I. Feldman of University of Pennsylvania School of Medicine, Philadelphia, one of the study authors.

The researchers used data on nearly 35,000 dialysis patients to analyze the effects of hemoglobin variability on the risk of death. They focused on a newly developed metric, termed "Hb-Var," that measures variability in hemoglobin levels independent of their absolute values and trends over time.

Hemoglobin is the oxygen-carrying compound in the blood. Anemia, or low hemoglobin levels, is one of the most frequent complications of kidney failure and a common cause of death in dialysis patients. Treatment including erythropoietin and intravenous iron has been a major advance in the management of kidney failure-related anemia, yet low blood counts and variation in hemoglobin levels continue to be a problem for many dialysis patients.

The new study found that high Hb-Var scores—indicating greater hemoglobin variability—predicted a higher risk of death in dialysis patients. For each 1 g/dL (gram per deciliter) increase in Hb-Var, the risk of death increased by 33 percent, after adjustment for other factors.

The relationship between Hb-Var and mortality remained significant even after adjustment for absolute hemoglobin levels and trends in hemoglobin levels over time. Higher Hb-Var scores predicted an

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increased risk of death in nearly all subgroups of dialysis patients. "As postulated, higher levels of hemoglobin variability were associated with higher rates of death," says Dr. Feldman.

In healthy people, hemoglobin levels typically remain within a narrow range, ensuring consistent delivery of oxygen to organs and tissues. In dialysis patients, repeated drops in hemoglobin levels—and thus in the ability to deliver adequate levels of oxygen—may result in injury to organs. The heart muscle (myocardium) and autonomic nervous system may be especially vulnerable, which may help to explain the increased rates of cardiovascular disease and death in ESRD patients.

The new study identifies Hb-Var as a potentially valuable measure of the effects of low hemoglobin in ESRD, and lends new insights into how anemia affects outcomes in dialysis patients. Dr. Feldman concludes, "These findings may ultimately lead to health care practice changes regarding the management of anemia—for example, the type, dose, and timing of treatment with erythropoietin and iron—that might improve outcomes among hemodialysis patients."

The study entitled, "Hemoglobin Variability and Mortality in ESRD" will be available online at www.asn-online.org under Media, 2007, beginning on Wednesday, November 14 and in print in the December issue of the *Journal of the American Society of Nephrology*.

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The ASN is a not-for-profit organization of 10,500 physicians and scientists dedicated to the study of nephrology and committed to providing a forum for the promulgation of information regarding the latest research and clinical findings on kidney diseases.

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