



# **Kidney**

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## Don't Trouble Your Heart: Naturally High Hemoglobin OK in Dialysis Patients, Study Suggests

*Naturally occurring high hemoglobin levels are safe for kidney disease patients on dialysis, according to a study appearing in an upcoming issue of the Journal of the American Society Nephrology (JASN). The results suggest that there is no need to lower these levels to protect patients' health.*

The vast majority of individuals who develop advanced chronic kidney disease (CKD) also develop progressive anemia, or red blood cell deficiency, that must be treated with medication. Prior to the approval of such erythropoiesis-stimulating agents in 1989, many dialysis patients maintained hemoglobin concentrations < 10 g/dL, with attendant fatigue and the need for repeated blood transfusions. Treatment is controversial, though, because correcting CKD patients' anemia so their target level of hemoglobin, which carries oxygen, is towards the normal range of ~14 g/dL may lead to serious thrombotic complications or even increased risk of death.

Researchers have wondered: are dialysis patients whose hemoglobin levels remain high naturally also at risk? Studying these patients provides a natural opportunity to investigate the clinical outcomes associated with higher hemoglobin concentrations in the absence of effects of prescribed drugs.

David Goodkin, MD (Arbor Research Collaborative for Health) and his colleagues studied the health of patients enrolled in the Dialysis Outcomes and Practice Patterns Study (DOPPS), which follows thousands of dialysis patients in 12 countries. Of 29,796 dialysis patients enrolled in the DOPPS with information on hemoglobin levels and medication dose over a 4 month period, 545 (1.8%) maintained hemoglobin concentrations > 12 g/dL without medication to stimulate red blood cell production by the bone marrow.

These patients were more likely to be men, to have been receiving dialysis for more years, and to have underlying cystic kidney disease. Conditions that lower oxygen levels in the blood, such as lung disease, cardiovascular disease,

and smoking, were also associated with an increased likelihood of manifesting higher hemoglobin concentrations. The investigators discovered that these patients did not have an elevated risk of dying compared with patients who had lower hemoglobin levels, after adjusting for age, sex, and concomitant diagnoses. Also, there were no differences in mortality between these patients and the subset of other patients who were taking medications to achieve hemoglobin concentrations > 12 g/dL.

While current guidelines caution against prescribing drugs to achieve hemoglobin concentrations > 12 g/dL in kidney disease patients, these findings suggest there is no need to remove blood, or phlebotomize, patients whose hemoglobin levels naturally reach this level without medication. The authors added that "determining the appropriate hemoglobin target range and pharmacological management strategy for dialysis patients is a very complex endeavor and the solution remains a work in progress."

Study co-authors include Douglas Fuller, Bruce Robinson, MD, Ronald Pisoni, PhD, Friedrich Port, MD (Arbor Research Collaborative for Health); Christian Combe, MD (University of Bordeaux, in France); Richard Fluck, MD (Royal Derby Hospital, in Derby, the United Kingdom); David Mendelssohn, MD (the University of Toronto, in Weston, Ontario, Canada); and Tadao Akizawa, MD (Showa University School of Medicine, in Tokyo, Japan).

David Goodkin et al. Naturally Occurring Higher Hemoglobin Concentration Does Not Increase Mortality among Hemodialysis Patients. *Journal of the American Society Nephrology*, December 16, 2010 DOI: 10.1681/ASN.2010020173