

# HIV/AIDS-Infected Patients Treated for Anemia with Red Blood Cell Growth Factors: A National Retrospective Study

Thomas Orsagh, Ph.D.  
Clarity Pharma Research

Jack R. Gallagher, Ed.D.  
Clarity Pharma Research

February 12, 2004

## Abstract

*A nationally representative sample of 150 infectious disease specialists (IDs) who met minimum treatment volume criteria for HIV/AIDS and red blood cell growth factors (RBC-SF) patients participated in the study. Physicians extracted detailed medical history and treatment information from the records of 460 randomly selected HIV/AIDS patients with anemia who were or had been treated with a red blood cell factor (RBC-GF). Study data were returned to researchers by fax or mail. Mean hemoglobin levels went down after HIV diagnosis (11.4 g/dL) and ARV therapy (11.2 g/dL) and went up between therapy initiation (9.1 g/dL) and the patient records audit (11.6 g/dL). Mean hemoglobin values at points before, during, and after treatment are presented.*

## Background and Objectives of Study

Anemia is a common manifestation of HIV infection, occurring in approximately 30% of patients with asymptomatic infection and in as many as 75% to 80% of those with AIDS (Levine, et al., *J Acquired Immune Deficiency Syndrome*. 2001 Jan 1; 26[1]:28). In an extensive literature review, Brokering and associates noted that anemia has consistently been shown to be a predictor of decreased survival, and treatment plays an important role in improving patients' survival and quality of life. These researchers further concluded that erythropoietin therapy should be considered a first-line treatment, and blood transfusions should be limited to situations requiring immediate correction of hemoglobin levels (Brokering et al., *Pharmacotherapy*. 2003 23 (11): 1475-1485). Erythropoietin agents are also referred to as red blood cell growth factors (RBCGFs).

The current study was conducted to foster a better understanding of the treatment of anemia in HIV/AIDS patients with RBCGF.

## Methodology

Stratified nationally representative samples of 150 infectious disease specialists (IDs) extracted detailed medical history and treatment information from the records of 460 randomly selected HIV/AIDS anemia patients who were being treated or had been treated with RBCGF. The last up to four qualified patients treated by the physician were selected for the study. Study data were transmitted to researchers by fax or mail. Physician study participants personally treated at least eight HIV/AIDS patients during a typical month, and treated at least four HIV/AIDS patients with RBC-GF during the past six months. Statistical

adjustments were made to ensure that each patient represented exactly the corresponding number of patients in the universe of total patients.

## Key Findings of Study

- Three out of five patients (61%) displayed AIDS indicator conditions at the time of chart review. Another 21% were "symptomatic" and the remaining patients were "asymptomatic acute (primary) HIV or PGL."
- The average CD4<sup>+</sup> counts were
  - ◆ 223 cells/mm<sup>3</sup> at HIV diagnosis
  - ◆ 188 at ARVT initiation
  - ◆ 455 at initiation of most recent course of RBC-GF therapy
  - ◆ 451 at the time of the chart audit.
- The percentage of patients with a CD4<sup>+</sup> count of 200 or less was 52% at HIV diagnosis and 45% at the time of the chart audit. (A healthy CD4 count for the average healthy person is between 500 and 1,500 cells/mm<sup>3</sup>.)
- Average viral load levels went down at each point after ARV therapy was initiated. For example, the average percentage of patients with a viral load of > 100,000 copies/mL was 73% at initial HIV diagnosis and 28% at the time of the chart audit.
- Mean hemoglobin levels went down after HIV diagnosis and ARV therapy and went up between RBC-GF therapy initiation and the patient records audit:

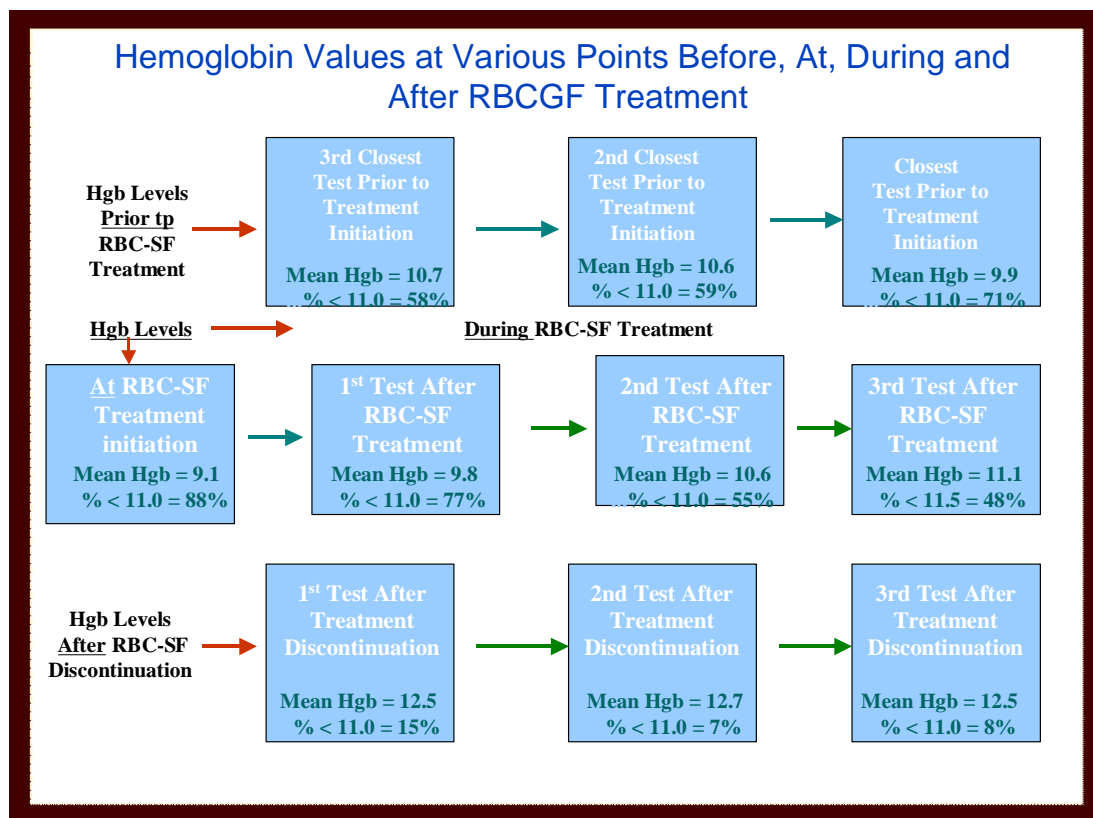
- ♦ 11.4 g/dL at HIV diagnosis
- ♦ 11.2 g/dL at ARV therapy initiation
- ♦ 9.1 g/dL at most recent RBC-GF initiation
- ♦ 11.6 g/dL at time of chart audit.

### Hemoglobin Values at Various Points During Treatment Process:

Mean hemoglobin values at points before, during, and after RBC-GF treatment are presented below. The findings reflect a clear trend. The hemoglobin values begin dropping

prior to RBC-GF therapy, reaching a low point at RBC-GF initiation, then increase during RBC-GF treatment, eventually climbing into the normal range on average, and sustained during at least the first three hemoglobin tests after RBC-GF is discontinued.

Almost nine out of ten patients (88%) had an Hgb value of less than 11.0 g/dL at the start of RBC-SF therapy. By the third Hgb test after RBC-SF discontinuation, only 8% of the patients had an Hgb value of less than 11.0 Hgb.



## About the Authors

**Thomas Orsagh, Ph.D.**, is an internationally recognized economist who has made numerous scientific contributions during and after his distinguished academic career. Dr. Orsagh attended the Wharton School and obtained a Ph.D. from the University of Pennsylvania. Dr. Orsagh has served on the faculties of the University of Pennsylvania, Lehigh University, the University of Karlsruhe in Germany, and the University of North Carolina in Chapel Hill. He was a Fulbright Research Scholar, a former editor of the **Southern Economics Journal**, and a former member of a national Presidential Task Force.

**Jack R. Gallagher, Ed.D.**, is a behavioral modeling scientist with more than 25 years of experience in medical and systems research. He is a former member of the University of Virginia School of Medicine faculty and directed a five-university research consortium. Dr. Gallagher has published many scientific papers, presented at numerous national and international conferences, and has served on the editorial review boards of two national journals. Dr. Gallagher also is author of the book **Changing Behavior: How and Why**.