

## PERBEDAAN KADAR HEMOGLOBIN PADA PASIEN HIV PASCA TERAPI KOMBINASI ANTIRETROVIRAL TENOFOVIR, LAMIVUDIN, DAN EFAVIRENZ DI RSUP DR. SARDJITO

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### INTISARI

**Latar belakang:** *Human Immunodeficiency Virus* (HIV) merupakan virus yang menyerang sistem kekebalan tubuh sehingga dapat menyebabkan melemahnya sistem kekebalan tubuh. Anemia merupakan gejala umum yang ditemukan pada penderita HIV, salah satunya terkait terapi *antiretroviral* (ARV). Prevalensi anemia pada populasi tersebut berkisar 1,3%–95%, dipengaruhi oleh jenis kelamin, kadar CD4 dan ada tidaknya infeksi oportunistik. Penggunaan ARV bertujuan untuk mensupresi replikasi virus HIV dan memperbaiki sistem imun tubuh. ARV nantinya dapat menurunkan infamasi sistemik yang menjadi salah satu penyebab pasien HIV dapat mengalami anemia. Berdasarkan panduan dari WHO tahun 2016, terapi ARV yang disarankan ialah kombinasi obat antara Tenofovir, Lamivudin dan Efavirenz (TLE), namun dalam terapi ini terdapat obat Lamivudin yang dapat menyebabkan penurunan kadar hemoglobin di dalam tubuh. Hal ini dikarenakan lamivudin mereduksi pembentukan eritrosit di sum – sum tulang belakang dan menyebabkan *pure red blood cell aplasia*. Terdapat studi terdahulu yang membahas terkait efek penggunaan ARV namun, studi tersebut membahas ARV secara umum dan belum banyak studi yang berfokus pada penggunaan Tenofovir, Lamivudin dan Efavirenz terhadap kadar hemoglobin secara khusus pada pasien HIV di RSUP Dr. Sardjito.

**Tujuan:** Mengetahui apakah terdapat perbedaan kadar hemoglobin pada pasien HIV pasca terapi Kombinasi Antiretroviral Tenofovir, Lamivudin, dan Efavirenz di RSUP Dr. Sardjito.

**Metode:** Penelitian ini menggunakan metode studi analitik cross sectional. Data berasal dari rekam medis pasien yang terdiagnosis HIV di RSUP Dr. Sardjito pada 1 Januari 2014 – 31 Desember 2021. Besar sampel diukur menggunakan rumus dua rerata pada populasi berpasangan dengan besar akhir sampel adalah 75 subjek. Kriteria inklusi adalah pasien dengan usia minimal 18 tahun, terdiagnosis HIV, mendapatkan terapi TLE, memiliki data *baseline* hemoglobin dan data setelah mendapatkan terapi TLE pada bulan ke-6. Sedangkan untuk kriteria eksklusi adalah Mengalami pergantian ARV, subjek dengan comorbid dan data tidak lengkap. Analisis yang digunakan

untuk melihat perbedaan kadar hemoglobin sebelum dan sesudah terapi adalah *paired T test* dan analisis sesuai dengan karakteristik dasar subjek menggunakan *paired T test* atau *wilcoxon test* dimana hasil yang dinyatakan signifikan ( $p < 0,05$ ).

**Hasil:** Berdasarkan analisis 75 subjek ditemukan bahwa terdapat perbedaan kadar hemoglobin sebelum dan sesudah terapi ( $p \leq 0,001$ ) dengan peningkatan sebesar 0,82 g/dL. Hasil analisis berdasarkan karakteristik dasar subjek yaitu, jenis kelamin, kadar CD4 dan status infeksi oportunistik menunjukkan bahwa terdapat perbedaan kadar hemoglobin sebelum dan sesudah terapi ( $p < 0,05$ ) kecuali pada subjek dengan infeksi oportunistik ( $p = 0,16$ ).

**Kesimpulan:** Terdapat peningkatan pada kadar hemoglobin sebelum dan sesudah mendapatkan terapi TLE pada bulan ke-6 di RSUP Dr Sardjito yang bermakna secara statistik.

**Kata kunci:** *Human Immunodeficiency Virus*, Antiretroviral, Lamivudin, Anemia.

## DIFFERENCES IN HEMOGLOBIN LEVELS IN HIV PATIENTS AFTER COMBINATION THERAPY OF TENOFOVIR, LAMIVUDINE, AND EFAVIRENZ ANTIRETROVIRALS AT DR. SARDJITO GENERAL HOSPITAL

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### ABSTRACT

**Background:** Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system, which can weaken the immune system. Anemia is a common symptom found in HIV patients, one of which is related to antiretroviral therapy (ARV). The prevalence of anemia in this population ranges from 1.3%–95%, influenced by gender, CD4 levels and the presence or absence of opportunistic infections. The use of ARVs aims to suppress HIV virus replication and improve the body's immune system. ARVs can later reduce systemic inflammation which is one of the causes of HIV patients experiencing anemia. Based on WHO guidelines in 2016, the recommended ARV therapy is a combination of drugs between Tenofovir, Lamivudine and Efavirenz (TLE), but in this therapy there is a drug Lamivudine which can cause a decrease in hemoglobin levels in the body. This is because lamivudine reduces the formation of erythrocytes in the bone marrow and causes pure red blood cell aplasia. There are previous studies that discuss the effects of ARV use, however, these studies discuss ARV in general and there are not many studies that focus on the use of Tenofovir, Lamivudine and Efavirenz on hemoglobin levels specifically in HIV patients at Dr. Sardjito Hospital.

**Objective:** To find out whether there is a difference in hemoglobin levels in HIV patients after the Combination Antiretroviral Therapy of Tenofovir, Lamivudine, and Efavirenz at Dr. Sardjito General Hospital.

**Methods:** This study used a cross-sectional analytical study method. Data came from medical records of patients diagnosed with HIV at Dr. Sardjito General Hospital on January 1, 2014 - December 31, 2021. The sample size was measured using the two-average formula in a paired population with a final sample size of 75 subjects. The inclusion criteria were patients with a minimum age of 18 years, diagnosed with HIV, receiving TLE therapy, having baseline hemoglobin data and data after receiving TLE

therapy in the 6th month. While the exclusion criteria were experiencing ARV changes, subjects with comorbidities and incomplete data. The analysis used to see the difference in hemoglobin levels before and after therapy was the paired T test and analysis according to the basic characteristics of the subjects using the paired T test or Wilcoxon test where the results were stated as significant ( $p < 0.05$ ).

**Results:** Based on the analysis of 75 subjects, it was found that there was a difference in hemoglobin levels before and after therapy ( $p \leq 0.001$ ) with an increase of 0.82 g/dL. The results of the analysis based on the basic characteristics of the subjects, namely gender, CD4 levels and opportunistic infection status showed that there was a difference in hemoglobin levels before and after therapy ( $p < 0.05$ ) except in subjects with opportunistic infections ( $p = 0.16$ ).

**Conclusion:** There was an increase in hemoglobin levels before and after receiving TLE therapy in the 6th month at Dr. Sardjito General Hospital which was statistically significant.

**Keywords:** Human Immunodeficiency Virus, Antiretrovirus, Lamivudine, Anemia