

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/379449055>

CD8 T Cells and HIV: Lessons from the Immune Battlefield

Article · April 2024

CITATIONS

0

READS

4

2 authors:



Emmanuel Ifeanyi Obeagu
Kampala International University (KIU)

1,600 PUBLICATIONS **20,558** CITATIONS

SEE PROFILE



Getrude Uzoma Obeagu
Kampala International University (KIU)

514 PUBLICATIONS **9,258** CITATIONS

SEE PROFILE

CD8 T Cells and HIV: Lessons from the Immune Battlefield

*Emmanuel Ifeanyi Obeagu¹ and Getrude Uzoma Obeagu²

¹Department of Medical Laboratory Science, Kampala International University, Uganda

²School of Nursing Science, Kampala International University, Uganda

*Corresponding author: Emmanuel Ifeanyi Obeagu, [Department of Medical Laboratory Science, Kampala International University, Uganda, \[emmanuelobeagu@yahoo.com\]\(mailto:emmanuelobeagu@yahoo.com\), ORCID: 0000-0002-4538-0161](#)

Abstract

CD8 T cells are key players in the immune response against HIV, tasked with identifying and eliminating virus-infected cells. However, the battle between HIV and CD8 T cells is complex, marked by a dynamic interplay between viral evasion strategies and host immune responses. This review delves into the intricate relationship between CD8 T cells and HIV, exploring the mechanisms of viral control, immune evasion tactics employed by HIV, and the implications for therapeutic interventions, including antiretroviral therapy (ART). By dissecting the dynamics of CD8 T cell responses in HIV infection, we glean insights into the immune battlefield, shedding light on potential strategies for bolstering immune-mediated control of the virus and advancing towards a functional cure.

Keywords: *CD8 T cells, HIV, immune response, cytotoxicity, viral control, immune evasion, antiretroviral therapy*

Introduction

The human immunodeficiency virus (HIV) remains one of the most significant global health challenges, with over 38 million people living with HIV worldwide. Despite advances in antiretroviral therapy (ART), which have transformed HIV infection from a fatal disease to a manageable chronic condition, achieving a cure remains elusive. Central to the immune response against HIV are CD8 T cells, which play a pivotal role in recognizing and eliminating virus-infected cells. CD8 T cells exert their antiviral effects through various mechanisms, including

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

direct cytotoxicity and the secretion of antiviral cytokines. Understanding the dynamics of CD8 T cell responses in HIV infection is critical for developing effective therapeutic strategies to control viral replication and prevent disease progression. The interplay between HIV and CD8 T cells is characterized by a complex arms race, with the virus evolving sophisticated mechanisms to evade immune surveillance. HIV employs multiple strategies to evade CD8 T cell-mediated immunity, including downregulation of major histocompatibility complex (MHC) class I expression, viral escape mutations within CD8 T cell epitopes, and induction of CD8 T cell dysfunction through chronic antigen exposure. Additionally, HIV can establish latent reservoirs in long-lived CD4 T cells, evading immune detection and contributing to viral persistence despite suppressive ART.¹⁻³⁰

While CD8 T cells are crucial for controlling HIV replication, their efficacy varies among individuals and over the course of infection. Factors such as viral diversity, host genetics, and immune activation influence the magnitude and quality of CD8 T cell responses in HIV infection. Understanding the determinants of effective CD8 T cell immunity against HIV is essential for identifying targets for therapeutic intervention and developing strategies to enhance immune-mediated control of the virus. Therapeutic interventions aimed at harnessing the power of CD8 T cells to combat HIV infection hold promise for achieving sustained virologic remission and ultimately a functional cure. Strategies such as therapeutic vaccination and immune checkpoint blockade are being explored to enhance CD8 T cell function and overcome immune exhaustion. Furthermore, the integration of immunomodulatory agents with existing ART regimens may offer synergistic benefits in suppressing viral replication and restoring immune function, paving the way for novel treatment approaches in HIV/AIDS.³¹⁻⁶⁰

CD8 T Cell Responses in HIV

CD8 T cells, also known as cytotoxic T lymphocytes (CTLs), are essential components of the adaptive immune response and play a crucial role in controlling HIV infection. Upon recognition of viral peptides presented on major histocompatibility complex class I (MHC-I) molecules, CD8 T cells become activated and exert their antiviral effects through various mechanisms. One of the primary functions of CD8 T cells in HIV infection is the direct killing of virus-infected cells. Upon recognition of HIV-derived peptides presented on the surface of infected cells, CD8 T cells release cytotoxic molecules such as perforin and granzymes, leading to the lysis of the target cell. This cytotoxic activity allows CD8 T cells to eliminate HIV-infected cells, thereby limiting viral replication and spread. In addition to their cytotoxic function, CD8 T cells secrete antiviral cytokines such as interferon-gamma (IFN- γ) and tumor necrosis factor-alpha (TNF- α) upon activation. These cytokines have multiple antiviral effects, including the inhibition of viral replication, the upregulation of antiviral genes in target cells, and the recruitment of other immune cells to the site of infection. By secreting these cytokines, CD8 T cells contribute to the overall immune response against HIV. Furthermore, CD8 T cells can induce apoptosis in HIV-infected cells through the engagement of death receptors such as Fas/Fas ligand (FasL) interactions. Binding of FasL on CD8 T cells to Fas receptors on infected cells triggers apoptotic signaling pathways, leading to programmed cell death. This mechanism of CD8 T cell-mediated killing helps

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

to eliminate HIV-infected cells and limit viral replication within the host. Despite their critical role in controlling HIV infection, CD8 T cell responses are subject to regulation and modulation by various factors, including the level of viral antigen exposure, immune activation, and regulatory T cell-mediated suppression. Additionally, the ability of HIV to evade CD8 T cell recognition through mechanisms such as viral escape mutations and downregulation of MHC-I expression poses challenges to the effectiveness of CD8 T cell responses in controlling viral replication.⁶¹⁻¹⁰⁰

Immune Evasion Strategies

HIV has evolved sophisticated immune evasion strategies to evade detection and destruction by the host immune system, including CD8 T cell responses. These strategies allow the virus to persistently replicate and establish chronic infection despite the presence of robust antiviral immune responses. One of the primary immune evasion strategies employed by HIV is the downregulation of major histocompatibility complex class I (MHC-I) molecules on the surface of infected cells. MHC-I molecules present viral peptides to CD8 T cells, triggering their activation and subsequent killing of infected cells. However, HIV-encoded proteins such as Nef and Vpu can interfere with MHC-I expression, reducing the ability of infected cells to be recognized and eliminated by CD8 T cells. In addition to downregulating MHC-I expression, HIV can also evade CD8 T cell recognition through the selection of viral escape mutations within CD8 T cell epitopes. By acquiring mutations that disrupt CD8 T cell recognition while preserving viral fitness, HIV can evade immune surveillance and persistently replicate within the host. This process of viral escape contributes to the ongoing evolution of the virus and poses challenges for the development of effective CD8 T cell-based immunotherapies.

Furthermore, HIV can induce dysfunction and exhaustion in CD8 T cells through chronic antigen exposure and immune activation. Persistent antigen stimulation leads to the upregulation of inhibitory receptors such as programmed cell death protein 1 (PD-1) and T cell immunoglobulin and mucin domain-containing protein 3 (Tim-3) on the surface of CD8 T cells, impairing their effector function and proliferative capacity. Exhausted CD8 T cells exhibit reduced cytokine production and cytotoxicity, limiting their ability to control viral replication. Moreover, HIV can establish latent reservoirs in long-lived CD4 T cells, evading immune detection and contributing to viral persistence despite suppressive antiretroviral therapy (ART). Latently infected CD4 T cells harbor integrated proviral DNA but remain transcriptionally silent, making them invisible to the immune system and resistant to CD8 T cell-mediated clearance. Reactivation of latent HIV reservoirs represents a significant obstacle to achieving a functional cure for HIV/AIDS.¹⁰¹⁻¹⁴⁰

Implications for Therapeutic Interventions

The dynamic interplay between CD8 T cells and HIV underscores the complexity of the host-virus interaction and presents challenges for therapeutic interventions aimed at controlling viral replication and preventing disease progression. One approach to enhancing CD8 T cell responses in HIV infection is through therapeutic vaccination. Therapeutic vaccines aim to induce or augment HIV-specific CD8 T cell responses, thereby enhancing immune-mediated control of the

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

virus. Strategies such as prime-boost vaccination regimens, which involve sequential administration of different vaccine modalities to enhance immune responses, are being explored to elicit robust and durable CD8 T cell immunity against HIV. Another promising approach is immune checkpoint blockade, which involves targeting inhibitory receptors on CD8 T cells to alleviate immune exhaustion and restore effector function. Immune checkpoint inhibitors such as anti-PD-1 antibodies have shown efficacy in enhancing CD8 T cell responses and improving viral control in preclinical and clinical studies. However, the safety and efficacy of immune checkpoint blockade in HIV-infected individuals require further investigation. Additionally, strategies aimed at reducing chronic immune activation and inflammation may help to restore CD8 T cell function and improve immune-mediated control of HIV. Immunosuppressive agents such as corticosteroids and anti-inflammatory drugs have been proposed as adjunctive therapies to dampen immune activation and mitigate CD8 T cell dysfunction. However, careful consideration must be given to the potential risks and benefits of immunosuppressive therapy in the context of HIV infection. Furthermore, the integration of immunomodulatory agents with existing antiretroviral therapy (ART) regimens may offer synergistic benefits in suppressing viral replication and restoring immune function. Strategies such as latency-reversing agents, which aim to reactivate latent HIV reservoirs and render them susceptible to immune clearance, hold promise for enhancing CD8 T cell-mediated control of the virus in combination with ART.¹⁴¹⁻¹⁸⁴

Conclusion

The intricate relationship between CD8 T cells and HIV epitomizes the ongoing battle within the immune system against the virus. While CD8 T cells are critical effectors in controlling HIV replication, the virus has evolved sophisticated immune evasion strategies to subvert immune surveillance and persist within the host. Therapeutic strategies aimed at bolstering CD8 T cell responses, such as therapeutic vaccination and immune checkpoint blockade, hold promise for restoring immune function and improving viral control. These approaches leverage the inherent power of the immune system to recognize and eliminate virus-infected cells, thereby augmenting the effectiveness of antiretroviral therapy (ART) and potentially leading to sustained virologic remission. Furthermore, the integration of immunomodulatory agents with existing ART regimens offers synergistic benefits in suppressing viral replication and restoring immune function. By targeting latent HIV reservoirs and reducing chronic immune activation, these strategies aim to create an environment conducive to immune-mediated control of the virus.

References

1. Williams CK, Williams CK. Therapy of cancer and retroviral diseases. Cancer and AIDS: Part III: Presentation and Management. 2019:65-158.
2. Masters MC, Krueger KM, Williams JL, Morrison L, Cohn SE. Beyond one pill, once daily: current challenges of antiretroviral therapy management in the United States. Expert review of clinical pharmacology. 2019;12(12):1129-1143.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. Elite Journal of Immunology, 2024; 2(4): 36-53

3. Hoffmann CJ, Mills LA, Gallant JE. Future of HIV/AIDS care in low-and middle-income countries. *Public Health Aspects of HIV/AIDS in Low and Middle Income Countries: Epidemiology, Prevention and Care*. 2009;41-69.
4. Kwarteng A, Ahuno ST, Kwakye-Nuako G. The therapeutic landscape of HIV-1 via genome editing. *AIDS research and therapy*. 2017; 14:1-6.
5. Obeagu EI, Okwuanaso CB, Edoho SH, Obeagu GU. Under-nutrition among HIV-exposed Uninfected Children: A Review of African Perspective. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):120-127.
6. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences*. 2023 ;3(1):7-12.
<https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/91>.
7. Obeagu EI, Obeagu GU. An update on premalignant cervical lesions and cervical cancer screening services among HIV positive women. *J Pub Health Nutri*. 2023; 6 (2). 2023; 141:1-2. [links/63e538ed64252375639dd0df/An-update-on-premalignant-cervical-lesions-and-cervical-cancer-screening-services-among-HIV-positive-women.pdf](https://doi.org/10.22192/ijcrms.2023.09.02.001).
8. Ezeoru VC, Enweani IB, Ochiabuto O, Nwachukwu AC, Ogbonna US, Obeagu EI. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(4):10-19.
9. Omo-Emmanuel UK, Chinedum OK, Obeagu EI. Evaluation of laboratory logistics management information system in HIV/AIDS comprehensive health facilities in Bayelsa State, Nigeria. *Int J Curr Res Med Sci*. 2017;3(1): 21-38.DOI: [10.22192/ijcrms.2017.03.01.004](https://doi.org/10.22192/ijcrms.2017.03.01.004)
10. Obeagu EI, Obeagu GU, Musiimenta E, Bot YS, Hassan AO. Factors contributing to low utilization of HIV counseling and testing services. *Int. J. Curr. Res. Med. Sci*. 2023;9(2): 1-5.DOI: [10.22192/ijcrms.2023.09.02.001](https://doi.org/10.22192/ijcrms.2023.09.02.001)
11. Obeagu EI, Obeagu GU. An update on survival of people living with HIV in Nigeria. *J Pub Health Nutri*. 2022; 5 (6). 2022;129. [links/645b4bfcf3512f1cc5885784/An-update-on-survival-of-people-living-with-HIV-in-Nigeria.pdf](https://doi.org/10.22192/ijcrms.2023.09.02.001).
12. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(52B):10-19.
13. Obeagu EI, Ogbonna US, Nwachukwu AC, Ochiabuto O, Enweani IB, Ezeoru VC. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(4):10-19.
14. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng UE, Ikpeme M, Bassey JO, Paul AO. TB Infection Control in TB/HIV Settings in Cross River State, Nigeria: Policy Vs Practice. *Journal of Pharmaceutical Research International*. 2020;32(22):101-119.
15. Obeagu EI, Eze VU, Alaebob EA, Ochei KC. Determination of haematocrit level and iron profile study among persons living with HIV in Umuahia, Abia State, Nigeria. *J BioInnovation*. 2016; 5:464-471. [links/592bb4990f7e9b9979a975cf/DETERMINATION-](https://doi.org/10.22192/ijcrms.2023.09.02.001)

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

OF-HAEMATOCRIT-LEVEL-AND-IRON-PROFILE-STUDY-AMONG-PERSONS-LIVING-WITH-HIV-IN-UMUAHIA-ABIA-STATE-NIGERIA.pdf.

16. Ifeanyi OE, Obeagu GU. The values of prothrombin time among HIV positive patients in FMC owerri. International Journal of Current Microbiology and Applied Sciences. 2015;4(4):911-916.
https://www.academia.edu/download/38320140/Obeagu_Emanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma2.EMMA1.pdf.
17. Izuchukwu IF, Ozims SJ, Agu GC, Obeagu EI, Onu I, Amah H, Nwosu DC, Nwanjo HU, Edward A, Arunsi MO. Knowledge of preventive measures and management of HIV/AIDS victims among parents in Umuna Orlu community of Imo state Nigeria. Int. J. Adv. Res. Biol. Sci. 2016;3(10): 55-65.DOI; [10.22192/ijarbs.2016.03.10.009](https://doi.org/10.22192/ijarbs.2016.03.10.009)
18. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. IOSR J Pharm Biol Sci. 2017;12(4):70-75.
[links/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf](https://www.iosrjournals.org/ViewArticle.aspx?doi=10.22192/ijarbs.2016.03.10.009)
19. Oloro OH, Oke TO, Obeagu EI. Evaluation of Coagulation Profile Patients with Pulmonary Tuberculosis and Human Immunodeficiency Virus in Owo, Ondo State, Nigeria. Madonna University journal of Medicine and Health Sciences. 2022;2(3):110-119.
20. Nwosu DC, Obeagu EI, Nkwocha BC, Nwanna CA, Nwanjo HU, Amadike JN, Elendu HN, Ofoedeme CN, Ozims SJ, Nwankpa P. Change in Lipid Peroxidation Marker (MDA) and Non enzymatic Antioxidants (VIT C & E) in HIV Seropositive Children in an Urban Community of Abia State. Nigeria. J. Bio. Innov. 2016;5(1):24-30.
[links/5ae735e9a6fdcc5b33eb8d6a/CHANGE-IN-LIPID-PEROXIDATION-MARKER-MDAAND-NON-ENZYMATIC-ANTIOXIDANTS-VIT-C-E-IN-HIV-SEROPOSITIVE-CHILDREN-IN-AN-URBAN-COMMUNITY-OF-ABIA-STATE-NIGERIA.pdf](https://www.iosrjournals.org/ViewArticle.aspx?doi=10.22192/ijarbs.2016.03.10.009).
21. Igwe CM, Obeagu IE, Ogbuabor OA. Clinical characteristics of people living with HIV/AIDS on ART in 2014 at tertiary health institutions in Enugu, Nigeria. J Pub Health Nutri. 2022; 5 (6). 2022;130. [links/645a166f5762c95ac3817d32/Clinical-characteristics-of-people-living-with-HIV-AIDS-on-ART-in-2014-at-tertiary-health-institutions-in-Enugu.pdf](https://www.iosrjournals.org/ViewArticle.aspx?doi=10.22192/ijarbs.2016.03.10.009).
22. Ifeanyi OE, Obeagu GU, Ijeoma FO, Chioma UI. The values of activated partial thromboplastin time (APTT) among HIV positive patients in FMC Owerri. Int J Curr Res Aca Rev. 2015; 3:139-144.
https://www.academia.edu/download/38320159/Obeagu_Emanuel_Ifeanyi3_et_al.IJC_RAR.pdf.
23. Obiomah CF, Obeagu EI, Ochei KC, Swem CA, Amachukwu BO. Hematological indices o HIV seropositive subjects in Nnamdi Azikiwe University teaching hospital (NAUTH), Nnewi. Ann Clin Lab Res. 2018;6(1):1-4.
[links/5aa2bb17a6fdccd544b7526e/Haematological-Indices-of-HIV-Seropositive-Subjects-at-Nnamdi-Azikiwe.pdf](https://www.iosrjournals.org/ViewArticle.aspx?doi=10.22192/ijarbs.2016.03.10.009)

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. Elite Journal of Immunology, 2024; 2(4): 36-53

24. Omo-Emmanuel UK, Ochei KC, Osuala EO, Obeagu EI, Onwuasoanya UF. Impact of prevention of mother to child transmission (PMTCT) of HIV on positivity rate in Kafanchan, Nigeria. *Int. J. Curr. Res. Med. Sci.* 2017;3(2): 28-34.DOI: [10.22192/ijcrms.2017.03.02.005](https://doi.org/10.22192/ijcrms.2017.03.02.005)
25. Obeagu EI, Obeagu GU. Platelet-Driven Modulation of HIV: Unraveling Interactions and Implications. *Journal home page:* [http://www.journalijiar.com](http://www.journalijiar.com;).;12(01).
26. Obeagu EI, Obeagu GU. Studies on platelets diagnostic indexes in patients with acute myeloid leukaemia in Uganda. *Int. J. Curr. Res. Med. Sci.* 2023;9(1):24-27.
27. Obeagu EI, Okechukwu PU, Alum EU, Obeagu GU, Opoku D, Scott GY, Amekpor F. Platelets as actors in inflammation and immunity: A fulcrum in immunity. *Int. J. Adv. Res. Biol. Sci.* 2023;10(3):81-89.
28. Obeagu EI, Mbabazi A, Obeagu GU, Muhimbura E, Igwe MC, Owunna TA, Okafor CJ, Jakheng SP. Evaluation of Platelets and Some Inflammation Markers of Patients with Acute Myeloid Leukaemia in A Tertiary Hospital in Uganda. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):78-84.
29. Obeagu EI, Obeagu GU. Platelet Distribution Width (PDW) as a Prognostic Marker for Anemia Severity in HIV Patients: A Comprehensive Review. *Journal home page:* [http://www.journalijiar.com](http://www.journalijiar.com;).;12(01).
30. Ifeanyi OE, Favour AA, Prayer NN. Updates on Human Immunodeficiency Virus and Platelets. *Int. J. Adv. Res. Biol. Sci.* 2020;7(6):1-7.
31. Obeagu EI, Muhimbura E, Kagenderezo BP, Nakyeyune S, Obeagu GU. An Insight of Interleukin-6 and Fibrinogen: In Regulating the Immune System. *J Biomed Sci.* 2022;11(10):83.
32. Okoroiwu IL, Obeagu EI, Vivian Egwim V. Assessment of White Blood Cell Count and Platelet Count in Women on Hormonal Contraceptives in Owerri, Imo State, Nigeria. *J Res Med Dent Sci.* 2021;9(12):498-501.
33. Obeagu EI, Okoroiwu IL, Obeagu GU. Relationship between Thrombopoietin and Interleukin 3: A Review. *Int J Curr Res Chem Pharm. Sci.* 2022;9(1):7-13.
34. Ukonu UC, Nwosu DC, Okoroiwu LI, Dike-Ndudim JN, Ukonu GO, Obeagu EI. Evaluation of Alloantibodies to human platelet antigen and Leucocyte antigen class 1 in Multitransfused patients in Owerri, Imo state. *Int. J. Curr. Res. Med. Sci.* 2023;9(1):38-44.
35. Aizaz M, Abbas FA, Abbas A, Tabassum S, Obeagu EI. Alarming rise in HIV cases in Pakistan: Challenges and future recommendations at hand. *Health Science Reports.* 2023;6(8):e1450.
36. Obeagu EI, Amekpor F, Scott GY. An update of human immunodeficiency virus infection: Bleeding disorders. *J Pub Health Nutri.* 2023; 6 (1). 2023;139. [links/645b4a6c2edb8e5f094d9bd9/An-update-of-human-immunodeficiency-virus-infection-Bleeding.pdf](https://doi.org/10.22192/ijcrms.2017.03.02.005).
37. Obeagu EI, Scott GY, Amekpor F, Ofodile AC, Edoho SH, Ahamefula C. Prevention of New Cases of Human Immunodeficiency Virus: Pragmatic Approaches of Saving Life in Developing Countries. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):128-134.
<https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/86>.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

38. Walter O, Anaebio QB, Obeagu EI, Okoroiwu IL. Evaluation of Activated Partial Thromboplastin Time and Prothrombin Time in HIV and TB Patients in Owerri Metropolis. *Journal of Pharmaceutical Research International*. 2022;29-34.
39. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng EU, Ikpeme M, Bassey JO, Paul AO. Cascade variabilities in TB case finding among people living with HIV and the use of IPT: assessment in three levels of care in cross River State, Nigeria. *Journal of Pharmaceutical Research International*. 2020;32(24):9-18.
40. Jakheng SP, Obeagu EI. Seroprevalence of human immunodeficiency virus based on demographic and risk factors among pregnant women attending clinics in Zaria Metropolis, Nigeria. *J Pub Health Nutri*. 2022; 5 (8). 2022;137. [links/6317a6b1acd814437f0ad268/Seroprevalence-of-human-immunodeficiency-virus-based-on-demographic-and-risk-factors-among-pregnant-women-attending-clinics-in-Zaria-Metropolis-Nigeria.pdf](https://doi.org/10.6317/a6b1acd814437f0ad268/Seroprevalence-of-human-immunodeficiency-virus-based-on-demographic-and-risk-factors-among-pregnant-women-attending-clinics-in-Zaria-Metropolis-Nigeria.pdf).
41. Obeagu EI, Obeagu GU. A Review of knowledge, attitudes and socio-demographic factors associated with non-adherence to antiretroviral therapy among people living with HIV/AIDS. *Int. J. Adv. Res. Biol. Sci*. 2023;10(9):135-142.DOI: 10.22192/ijarbs.2023.10.09.015 [links/6516faa61e2386049de5e828/A-Review-of-knowledge-attitudes-and-socio-demographic-factors-associated-with-non-adherence-to-antiretroviral-therapy-among-people-living-with-HIV-AIDS.pdf](https://doi.org/10.22192/ijarbs.2023.10.09.015)
42. Obeagu EI, Onuoha EC. Tuberculosis among HIV Patients: A review of Prevalence and Associated Factors. *Int. J. Adv. Res. Biol. Sci*. 2023;10(9):128-134.DOI: 10.22192/ijarbs.2023.10.09.014 [links/6516f938b0df2f20a2f8b0e0/Tuberculosis-among-HIV-Patients-A-review-of-Prevalence-and-Associated-Factors.pdf](https://doi.org/10.22192/ijarbs.2023.10.09.014).
43. Obeagu EI, Ibeh NC, Nwobodo HA, Ochei KC, Iwegbulam CP. Haematological indices of malaria patients coinfectd with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci*. 2017;3(5):100-104.DOI: 10.22192/ijcrms.2017.03.05.014 [https://www.academia.edu/download/54317126/Haematological indices of malaria patients coinfectd with HIV.pdf](https://www.academia.edu/download/54317126/Haematological_indices_of_malaria_patients_coinfectd_with_HIV.pdf)
44. Jakheng SP, Obeagu EI, Abdullahi IO, Jakheng EW, Chukwueze CM, Eze GC, Essien UC, Madekwe CC, Madekwe CC, Vidya S, Kumar S. Distribution Rate of Chlamydial Infection According to Demographic Factors among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. *South Asian Journal of Research in Microbiology*. 2022;13(2):26-31.
45. Okorie HM, Obeagu Emmanuel I, Okpoli Henry CH, Chukwu Stella N. Comparative study of enzyme linked immunosorbent assay (Elisa) and rapid test screening methods on HIV, Hbsag, Hcv and Syphilis among voluntary donors in. Owerri, Nigeria. *J Clin Commun Med*. 2020;2(3):180-183.DOI: DOI: 10.32474/JCCM.2020.02.000137 [links/5f344530458515b7291bd95f/Comparative-Study-of-Enzyme-Linked-Immunesorbent-Assay-ELISA-and-Rapid-Test-Screening-Methods-on-HIV-HBsAg-HCV-and-Syphilis-among-Voluntary-Donors-in-Owerri-Nigeria.pdf](https://doi.org/10.32474/JCCM.2020.02.000137).
46. Ezugwu UM, Onyenekwe CC, Ukibe NR, Ahaneku JE, Onah CE, Obeagu EI, Emeje PI, Awalu JC, Igbokwe GE. Use of ATP, GTP, ADP and AMP as an Index of Energy Utilization and Storage in HIV Infected Individuals at NAUTH, Nigeria: A Longitudinal,

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

- Prospective, Case-Controlled Study. *Journal of Pharmaceutical Research International*. 2021;33(47A):78-84.
47. Emmanuel G, Martin O, Peter OS, Obeagu EI, Daniel K. Factors Influencing Early Neonatal Adverse Outcomes among Women with HIV with Post Dated Pregnancies Delivering at Kampala International University Teaching Hospital, Uganda. *Asian Journal of Pregnancy and Childbirth*. 2023 Jul 29;6(1):203-211. <http://research.sdpublishers.net/id/eprint/2819/>.
 48. Igwe MC, Obeagu EI, Ogbuabor AO, Eze GC, Ikpenwa JN, Eze-Stephen PE. Socio-Demographic Variables of People Living with HIV/AIDS Initiated on ART in 2014 at Tertiary Health Institution in Enugu State. *Asian Journal of Research in Infectious Diseases*. 2022;10(4):1-7.
 49. Vincent CC, Obeagu EI, Agu IS, Ukeagu NC, Onyekachi-Chigbu AC. Adherence to Antiretroviral Therapy among HIV/AIDS in Federal Medical Centre, Owerri. *Journal of Pharmaceutical Research International*. 2021;33(57A):360-368.
 50. Igwe MC, Obeagu EI, Ogbuabor AO. Analysis of the Factors and Predictors of Adherence to Healthcare of People Living With Hiv/Aids In Tertiary Health Institutions In Enugu State. *Madonna University Journal of Medicine and Health Sciences*. 2022;2(3):42-57. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/75>.
 51. Madekwe CC, Madekwe CC, Obeagu EI. Inequality of monitoring in Human Immunodeficiency Virus, Tuberculosis and Malaria: A Review. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):6-15. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/69>
 52. Echendu GE, Vincent CC, Ibebuikwe J, Asodike M, Naze N, Chinedu EP, Ohale B, Obeagu EI. WEIGHTS OF INFANTS BORN TO HIV INFECTED MOTHERS: A PROSPECTIVE COHORT STUDY IN FEDERAL MEDICAL CENTRE, OWERRI, IMO STATE. *European Journal of Pharmaceutical and Medical Research*, 2023; 10(8): 564-568
 53. Nwosu DC, Nwanjo HU, Okolie NJ, Ikeh K, Ajero CM, Dike J, Ojiegbe GC, Oze GO, Obeagu EI, Nnatunanya I, Azuonwu O. BIOCHEMICAL ALTERATIONS IN ADULT HIV PATIENTS ON ANTIRETROVIRAL THERAPY. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2015; 4(3): 153-160. [links/5a4fd0500f7e9bbc10526b38/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY.pdf](https://www.researchgate.net/publication/354440500/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY).
 54. Obeagu EI, Obeagu GU. Effect of CD4 Counts on Coagulation Parameters among HIV Positive Patients in Federal Medical Centre, Owerri, Nigeria. *Int. J. Curr. Res. Biosci. Plant Biol*. 2015;2(4):45-49.
 55. Obeagu EI. Gestational Thrombocytopaenia. *J Gynecol Women's Health*. 2023;25(3):556163.
 56. Okoroiwu IL, Obeagu EI, Obeagu GU. Determination of clot retraction in pregnant women attending antenatal clinic in federal medical centre Owerri, Nigeria. *Madonna University Journal of Medicine and Health Sciences*. 2022;2(2):91-97.
 57. Ezimah AC, Obeagu EI, Asur A, Ezimah UA, Ezimah CO. Absolute platelet count in adult patients with musculoskeletal pain: Current perspectives. *Int. J. Curr. Res. Med. Sci*. 2016;2(2):30-7.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

58. Obeagu EI, Ogunnaya FU. Pregnancyinduced Haematological Changes: A Key to Maternal and Child Health. *European Journal of Biomedical*. 2023;10(8):42-43.
59. Obeagu EI, Chikelu IM, Obarezi TN, Ogbuabor BN, Anaebo QB. Haematological effects of fluted pumpkin (*Telfairia occidentalis*) leaves in rats. *International Journal of Life Sciences Biotechnology and Pharma Research*. 2014;3(1):172-182.
60. Igwe MC, Obeagu EI. Determination of the Effect of Methanol Extract of Tetrapleura Tetraptera Fruit Osmotic Fragility of Erythrocytes, Platelet Aggregation and Phospholipase A2 Activity. *Ann. Clin. Lab. Res*. 2018; 6:250-255.
61. Obeagu EF, Onyenweaku FC, Nwobodo HA, Ochei KC, Ochiabuto Ogochukwu MT, Onwuasoanya UF. Impact of HIV and hepatitis b virus coinfection on selected haematological markers of the patients in Umuahia, Abia State, Nigeria. *Ann Clin Lab Res*. 2017;5(2):175.
62. Obeagu EI, Adepoju OJ, Okafor CJ, Obeagu GU, Ibekwe AM, Okpala PU, Agu CC. Assessment of Haematological Changes in Pregnant Women of Ido, Ondo State, Nigeria. *J Res Med Dent Sci*. 2021;9(4):145-148.
63. Oke OT, Eyitayo EF, Obeagu EI. Inhalation effect of insecticides on some Haematological parameters of rabbits. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2022;9(9):1-9.
64. Ifeanyi OE, Obeagu GU. The values of prothrombin time among HIV positive patients in FMC owerri. *International Journal of Current Microbiology and Applied Sciences*. 2015;4(4):911-6.
65. Obeagu EI, Nwosu DC. Adverse drug reactions in HIV/AIDS patients on highly active antiretro viral therapy: a review of prevalence. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2019;6(12):45-8.DOI: [10.22192/ijcrps.2019.06.12.004](https://doi.org/10.22192/ijcrps.2019.06.12.004)
[links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf](https://www.researchgate.net/publication/335795158/links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf).
66. Obeagu EI, Scott GY, Amekpor F, Obeagu GU. Implications of CD4/CD8 ratios in Human Immunodeficiency Virus infections. *Int. J. Curr. Res. Med. Sci*. 2023;9(2):6-13.DOI: [10.22192/ijcrms.2023.09.02.002](https://doi.org/10.22192/ijcrms.2023.09.02.002) [links/645a4a462ed8e5f094ad37c/Implications-of-CD4-CD8-ratios-in-Human-Immunodeficiency-Virus-infections.pdf](https://www.researchgate.net/publication/36454462ed8e5f094ad37c/Implications-of-CD4-CD8-ratios-in-Human-Immunodeficiency-Virus-infections.pdf).
67. Obeagu EI, Ochei KC, Okeke EI, Anode AC. Assessment of the level of haemoglobin and erythropoietin in persons living with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci*. 2016;2(4):29-33. [links/5711c47508aeebe07c02496b/Assessment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf](https://www.researchgate.net/publication/31147508aeebe07c02496b/Assessment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf).
68. Ifeanyi OE, Obeagu GU. The Values of CD4 Count, among HIV Positive Patients in FMC Owerri. *Int. J. Curr. Microbiol. App. Sci*. 2015;4(4):906-910. https://www.academia.edu/download/38320134/Obeagu_Emanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma.EMMA2.pdf.
69. Obeagu EI, Okeke EI, Anonde Andrew C. Evaluation of haemoglobin and iron profile study among persons living with HIV in Umuahia, Abia state, Nigeria. *Int. J. Curr. Res. Biol. Med*. 2016;1(2):1-5.
70. Ibebuikie JE, Nwokike GI, Nwosu DC, Obeagu EI. A Retrospective Study on Human Immune Deficiency Virus among Pregnant Women Attending Antenatal Clinic in Imo State University Teaching Hospital. *International Journal of Medical Science and Dental*

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

Research, 2018; 1 (2):08-14.
<https://www.ijmsdr.org/published%20paper/li1i2/A%20Retrospective%20Study%20on%20Human%20Immune%20Deficiency%20Virus%20among%20Pregnant%20Women%20Attending%20Antenatal%20Clinic%20in%20Imo%20State%20University%20Teaching%20Hospital.pdf>.

71. Obeagu EI, Obarezi TN, Omeh YN, Okoro NK, Eze OB. Assessment of some haematological and biochemical parameters in HIV patients before receiving treatment in Aba, Abia State, Nigeria. *Res J Pharma Biol Chem Sci*. 2014; 5:825-830.
72. Obeagu EI, Obarezi TN, Ogbuabor BN, Anaebio QB, Eze GC. Pattern of total white blood cell and differential count values in HIV positive patients receiving treatment in Federal Teaching Hospital Abakaliki, Ebonyi State, Nigeria. *International Journal of Life Science, Biotechnology and Pharmacy Research*. 2014; 391:186-189.
73. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences*. 2023; 3 (1): 7-12.
74. Oloro OH, Obeagu EI. A Systematic Review on Some Coagulation Profile in HIV Infection. *International Journal of Innovative and Applied Research*. 2022;10(5):1-11.
75. Nwosu DC, Obeagu EI, Nkwuocha BC, Nwanna CA, Nwanjo HU, Amadike JN, Ezemma MC, Okpomeshine EA, Ozims SJ, Agu GC. Alterations in superoxide dismutase, vitamins C and E in HIV infected children in Umuahia, Abia state. *International Journal of Advanced Research in Biological Sciences*. 2015;2(11):268-271.
76. Ifeanyi OE, Uzoma OG, Stella EI, Chinedum OK, Abum SC. Vitamin D and insulin resistance in HIV sero positive individuals in Umudike. *Int. J. Curr. Res. Med. Sci*. 2018;4(2):104-108.
77. Ifeanyi OE, Leticia OI, Nwosu D, Chinedum OK. A Review on blood borne viral infections: universal precautions. *Int. J. Adv. Res. Biol. Sci*. 2018;5(6):60-66.
78. Nwovu AI, Ifeanyi OE, Uzoma OG, Nwebonyi NS. Occurrence of Some Blood Borne Viral Infection and Adherence to Universal Precautions among Laboratory Staff in Federal Teaching Hospital Abakaliki Ebonyi State. *Arch Blood Transfus Disord*. 2018;1(2).
79. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. *IOSR J Pharm Biol Sci*. 2017;12(4):70-75.
80. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(52B):10-19.
81. Obeagu EI, Obeagu GU, Ede MO, Odo EO, Buhari HA. Translation of HIV/AIDS knowledge into behavior change among secondary school adolescents in Uganda: A review. *Medicine (Baltimore)*. 2023;102(49): e36599. doi: 10.1097/MD.00000000000036599. PMID: 38065920; PMCID: PMC10713174.
82. Anyiam AF, Arinze-Anyiam OC, Ironi EA, Obeagu EI. Distribution of ABO and rhesus blood grouping with HIV infection among blood donors in Ekiti State Nigeria. *Medicine*

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

- (Baltimore). 2023;102(47): e36342. doi: 10.1097/MD.00000000000036342. PMID: 38013335; PMCID: PMC10681551.
83. Echefu SN, Udosen JE, Akwiwu EC, Akpotuzor JO, Obeagu EI. Effect of Dolutegravir regimen against other regimens on some hematological parameters, CD4 count and viral load of people living with HIV infection in South Eastern Nigeria. *Medicine (Baltimore)*. 2023;102(47): e35910. doi: 10.1097/MD.00000000000035910. PMID: 38013350; PMCID: PMC10681510.
 84. Opeyemi AA, Obeagu EI. Regulations of malaria in children with human immunodeficiency virus infection: A review. *Medicine (Baltimore)*. 2023;102(46): e36166. doi: 10.1097/MD.00000000000036166. PMID: 37986340; PMCID: PMC10659731.
 85. Obeagu EI, Obeagu GU, Obiezu J, Ezeonwumelu C, Ogunnaya FU, Ngwoke AO, Emeka-Obi OR,
 86. Obeagu EI, Ubosi NI, Uzoma G. Storms and Struggles: Managing HIV Amid Natural Disasters. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2023;10(11):14-25.
 87. Obeagu EI, Obeagu GU. Human Immunodeficiency Virus and tuberculosis infection: A review of prevalence of associated factors. *Int. J. Adv. Multidiscip. Res.* 2023;10(10):56-62.
 88. Obeagu EI, Obeagu GU. Unmasking the Truth: Addressing Stigma in the Fight Against HIV. *Elite Journal of Public Health*. 2024;2(1):8-22.
 89. Obeagu EI, Obeagu GU, Okwuanaso CB. Optimizing Immune Health in HIV Patients through Nutrition: A Review. *Elite Journal of Immunology*. 2024;2(1):14-33.
 90. Obeagu EI, Obeagu GU. Utilization of immunological ratios in HIV: Implications for monitoring and therapeutic strategies. *Medicine*. 2024;103(9): e37354.
 91. Obeagu EI, Obeagu GU. CD8 Dynamics in HIV Infection: A Synoptic Review. *Elite Journal of Immunology*. 2024;2(1):1-3.
 92. Obeagu EI, Obeagu GU. Implications of B Lymphocyte Dysfunction in HIV/AIDS. *Elite Journal of Immunology*. 2024;2(1):34-46.
 93. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):46-58.
 94. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. *Elite Journal of Medicine*. 2024;2(1):35-46.
 95. Obeagu EI, Obeagu GU. Platelet-Driven Modulation of HIV: Unraveling Interactions and Implications. *Journal home page: <http://www.journalijar.com>*;12(01).
 96. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. *Elite Journal of HIV*. 2024;2(1):65-78.
 97. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. *Journal home page: <http://www.journalijar.com>*;12(01).
 98. Obeagu EI, Obeagu GU. Synergistic Effects of Blood Transfusion and HIV in Children Under 5 Years with Severe Malaria: A Review. *Elite Journal of HIV*. 2024;2(1):31-50.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

99. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. *Elite Journal of HIV*. 2024;2(1):1-5.
100. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci.* 2024;10(1):25-36.
101. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. *Sciences*. 2024;4(1):32-7.
102. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. *Sciences*. 2024;4(1):38-44.
103. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. *Elite Journal of Health Science*. 2024;2(1):33-42.
104. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. *Elite Journal of Haematology*. 2024;2(1):26-41.
105. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. *Elite Journal of Medicine*. 2024;2(2):104-15.
106. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. *Elite Journal of Immunology*. 2024;2(1):47-64.
107. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. *Elite Journal of HIV*. 2024;2(2):1-7.
108. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. *Elite Journal of Public Health*. 2024;2(1):52-61.
109. Obeagu EI, Obeagu GU. Understanding Hematocrit Fluctuations in HIV-Malaria Coinfection for Improved Management. *Elite Journal of Public Health*. 2024;2(1):22-34.
110. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(1):21-31.
111. Obeagu EI, Obeagu GU. Platelet Distribution Width (PDW) as a Prognostic Marker for Anemia Severity in HIV Patients: A Comprehensive Review. *Journal home page: <http://www.journalijar.com>*;12(01).
112. Obeagu EI, Obeagu GU. Neonatal Outcomes in Children Born to Mothers with Severe Malaria, HIV, and Transfusion History: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(3):38-58.
113. Obeagu EI, Obeagu GU. Assessing Platelet Functionality in HIV Patients Receiving Antiretroviral Therapy: Implications for Risk Assessment. *Elite Journal of HIV*. 2024;2(3):14-26.
114. Obeagu EI, Obeagu GU. Advancements in HIV Prevention: Africa's Trailblazing Initiatives and Breakthroughs. *Elite Journal of Public Health*. 2024;2(1):52-63.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

115. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):46-58.
116. Obeagu EI, Obeagu GU. Counting Cells, Shaping Fates: CD4/CD8 Ratios in HIV. *Elite Journal of Scientific Research and Review*. 2024;2(1):37-50.
117. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. *Elite Journal of HIV*. 2024;2(1):65-78.
118. Obeagu EI, Obeagu GU. Immune Modulation in HIV-Positive Neonates: Insights and Implications for Clinical Management. *Elite Journal of Nursing and Health Science*. 2024;2(3):59-72.
119. Obeagu EI, Ayogu EE, Obeagu GU. Impact on Viral Load Dynamics: Understanding the Interplay between Blood Transfusion and Antiretroviral Therapy in HIV Management. *Elite Journal of Nursing and Health Science*. 2024;2(2):5-15.
120. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. *Elite Journal of Medicine*. 2024;2(1):35-46.
121. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. *Elite Journal of HIV*. 2024;2(2):1-7.
122. Obeagu EI, Obeagu GU. Understanding ART and Platelet Functionality: Implications for HIV Patients. *Elite Journal of HIV*. 2024;2(2):60-73.
123. Obeagu EI, Obeagu GU. The Role of Blood Transfusion Strategies in HIV Management: Current Insights and Future Directions. *Elite Journal of Medicine*. 2024;2(1):10-22.
124. Obeagu EI, AmaezeAA O, Obeagu GU. B Cell Deficiency and Implications in HIV Pathogenesis: Unraveling the Complex Interplay. *Elite Journal of Nursing and Health Science*. 2024;2(2):33-46.
125. Obeagu EI, Obeagu GU. Eosinophil Dynamics in Pregnancy among Women Living with HIV: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci*. 2024;10(1):11-24.
126. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci*. 2024;10(1):25-36.
127. Obeagu EI, Obeagu GU. Unveiling the Role of Innate Immune Activation in Pediatric HIV: A Review. *Elite Journal of Immunology*. 2024;2(3):33-44.
128. Obeagu EI, Obeagu GU. Harnessing B Cell Responses for Personalized Approaches in HIV Management. *Elite Journal of Immunology*. 2024;2(2):15-28.
129. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Neutrophil Dynamics: Unveiling Their Role in HIV Progression within Malaria Patients. *Journal home page: <http://www.journalijar.com>;12(01)*.
130. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. *Journal home page: <http://www.journalijar.com>;12(01)*.
131. Obeagu EI, Igwe MC, Obeagu GU. The Power of Unity: Collective Efforts in Confronting HIV Stigma. *Elite Journal of Public Health*. 2024;2(3):22-36.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

132. Obeagu EI, Anyiam AF, Obeagu GU. Managing Anemia in HIV through Blood Transfusions: Clinical Considerations and Innovations. *Elite Journal of HIV*. 2024;2(1):16-30.
133. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. *Elite Journal of Immunology*. 2024;2(1):47-64.
134. Obeagu EI, Obeagu GU. Platelet Aberrations in HIV Patients: Assessing Impacts of ART. *Elite Journal of Haematology*, 2024; 2 (3):10-24.
135. Obeagu EI, Obeagu GU. Hematological Changes Following Blood Transfusion in Young Children with Severe Malaria and HIV: A Critical Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):33-45.
136. Obeagu EI, Anyiam AF, Obeagu GU. Erythropoietin Therapy in HIV-Infected Individuals: A Critical Review. *Elite Journal of HIV*. 2024;2(1):51-64.
137. Obeagu EI, Ubosi NI, Obeagu GU, Obeagu AA. Nutritional Strategies for Enhancing Immune Resilience in HIV: A Review. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024;11(2):41-51.
138. Obeagu EI, Obeagu GU. The Crucial Role of Erythropoietin in Managing Anemia in HIV: A Review. *Elite Journal of Scientific Research and Review*. 2024;2(1):24-36.
139. Obeagu EI, Obeagu GU. Impact of Maternal Eosinophils on Neonatal Immunity in HIV-Exposed Infants: A Review. *Elite Journal of Immunology*. 2024;2(3):1-8.
140. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. *Elite Journal of HIV*. 2024;2(1):1-5.
141. Obeagu EI, Obeagu GU. Anemia and Erythropoietin: Key Players in HIV Disease Progression. *Elite Journal of Haematology*, 2024; 2 (3):42-57.
142. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. *Elite Journal of Public Health*. 2024;2(1):52-61.
143. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. *Sciences*. 2024;4(1):32-7.
144. Obeagu EI, Obeagu GU. P-Selectin and Immune Activation in HIV: Clinical Implications. *Elite Journal of Health Science*. 2024;2(2):16-29.
145. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. *Sciences*. 2024;4(1):38-44.
146. Obeagu EI, Obeagu GU. Optimizing Blood Transfusion Protocols for Breast Cancer Patients Living with HIV: A Comprehensive Review. *Elite Journal of Nursing and Health Science*. 2024;2(2):1-7.
147. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. *Elite Journal of Haematology*. 2024;2(1):26-41.
148. Obeagu EI, Obeagu GU. Transfusion-Related Complications in Children Under 5 with Coexisting HIV and Severe Malaria: A Review. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024;11(2):9-19.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

149. Obeagu EI, Obeagu GU. Impact of Blood Transfusion on Viral Load Dynamics in HIV-Positive Neonates with Severe Malaria: A Review. *Elite Journal of Scientific Research and Review*. 2024;2(1):42-60.
150. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. *Elite Journal of Medicine*. 2024;2(2):104-5.
151. Obeagu EI, Obeagu GU. P-Selectin Expression in HIV-Associated Coagulopathy: Implications for Treatment. *Elite Journal of Haematology*, 2024; 2 (3):25-41.
152. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. *Elite Journal of Health Science*. 2024;2(1):33-42.
153. Obeagu EI, Obeagu GU. Exploring the Role of L-selectin in HIV-related Immune Exhaustion: Insights and Therapeutic Implications. *Elite Journal of HIV*. 2024;2(2):43-59.
154. Obeagu EI. Erythropoietin and the Immune System: Relevance in HIV Management. *Elite Journal of Health Science*. 2024;2(3):23-35.
155. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(1):21-31.
156. Obeagu EI, Obeagu GU. Unraveling the Role of Eosinophil Extracellular Traps (EETs) in HIV-Infected Pregnant Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(3):84-99.
157. Obeagu EI, Obeagu GU. Hematologic Considerations in Breast Cancer Patients with HIV: Insights into Blood Transfusion Strategies. *Elite Journal of Health Science*. 2024;2(2):20-35.
158. Obeagu EI, Obeagu GU. L-selectin and HIV-Induced Immune Cell Trafficking: Implications for Pathogenesis and Therapeutic Strategies. *Elite Journal of Laboratory Medicine*. 2024;2(2):30-46.
159. Obeagu EI, Obeagu GU. The Intricate Relationship Between Erythropoietin and HIV-Induced Anemia: Unraveling Pathways for Therapeutic Insights. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2024;11(2):30-40.
160. Obeagu EI, Obeagu GU. The Role of L-selectin in Tuberculosis and HIV Coinfection: Implications for Disease Diagnosis and Management. *Elite Journal of Public Health*. 2024;2(1):35-51.
161. Kalu OA, Ukibe NR, Onyenekwe CC, Okoyeagu RC, Nnaemeka WS, Onyenekwe AJ, Ukibe EG, Ukibe BC, Ukibe VE, Obeagu EI. Assessment of Serum Cystatin C, Microalbumin Levels and Egfr in HIV Seropositive Individuals based on Age and Gender in NAUTH, Nnewi, Nigeria. *Elite Journal of Medicine*. 2024;2(3):48-59.
162. Obeagu EI, Obeagu GU. Understanding Immune Cell Trafficking in Tuberculosis-HIV Coinfection: The Role of L-selectin Pathways. *Elite Journal of Immunology*. 2024;2(2):43-59.
163. Obeagu EI, Obeagu GU. Eosinophilic Changes in Placental Tissues of HIV-Positive Pregnant Women: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):14-32.

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

164. Obeagu EI, Obeagu GU. P-Selectin and Platelet Activation in HIV: Implications for Antiviral Therapy. *Elite Journal of Scientific Research and Review*. 2024;2(1):17-41.
165. Obeagu EI, Obeagu GU. Strength in Unity: Building Support Networks for HIV Patients in Uganda. *Elite Journal of Medicine*. 2024;2(1):1-6.
166. Obeagu EI, GU EE. Understanding the Intersection of Highly Active Antiretroviral Therapy and Platelets in HIV Patients: A Review. *Elite Journal of Haematology*, 2024; 2(3):111-7.
167. Obeagu EI, Obeagu GU. Anemia in HIV: The Role of Erythropoietin in Disease Progression. *Elite Journal of Haematology*, 2024; 2(4): 51-67
168. Obeagu EI, Obeagu GU. Anemia in HIV: The Role of Erythropoietin in Disease Progression. *Elite Journal of Haematology*, 2024; 2(4): 51-67
169. Obeagu EI, Obeagu GU. **ART and Platelet Dynamics: Assessing Implications for HIV Patient Care.** *Elite Journal of Haematology*, 2024; 2(4): 68-85
170. Obeagu EI, Obeagu GU. Impact of Breastfeeding on Infant Immune Responses in the Context of HIV. *Elite Journal of Nursing and Health Science*, 2024; 2(4):23-39
171. Obeagu EI, Obeagu GU. HIV-Induced Immune Exhaustion in Neonates: A Review of Mechanisms and Implications. *Elite Journal of Immunology*, 2024; 2(3): 45-61
172. Obeagu EI, Obeagu GU. Immunodeficiency and Immune Reconstitution in Pediatric HIV: Mechanisms, Challenges, and Therapeutic Strategies. *Elite Journal of Immunology*, 2024; 2(3): 62-79
173. Obeagu EI, Obeagu GU. Hematological Consequences of Erythropoietin in HIV: Clinical Implications. *Elite Journal of Haematology*, 2024; 2(4): 86-104
174. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Dysfunction in HIV-Related Hematological Malignancies: A Review. *Elite Journal of Haematology*, 2024; 2(4): 105-122
175. Obeagu EI, Obeagu GU. Exploration of Intricate Relationship between GATA-1 and Anemia in HIV. *Elite Journal of Haematology*, 2024; 2(4): 123-140
176. Obeagu EI, Obeagu GU. GATA-1 and Immune Dysregulation in HIV/AIDS: Implications for Therapy. *Elite Journal of HIV*, 2024; 2(3): 69-85
177. Obeagu EI, Obeagu GU. The Role of GATA-1 in Erythropoietin Response and Resistance in HIV/AIDS. *Elite Journal of HIV*, 2024; 2(4): 1-17
178. Obeagu EI, Obeagu GU. Understanding the Role of GATA-1 in T-Cell Development in the Context of HIV Infection. *Elite Journal of HIV*, 2024; 2(4): 18-34
179. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) Pathway Modulation in HIV/AIDS: From Bench to Bedside. *Elite Journal of HIV*, 2024; 2(4): 35-53
180. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) and Immune Checkpoint Inhibitors in HIV-Related Lymphomas: Current Insights and Future Directions. *Elite Journal of Immunology*, 2024; 2(4): 1-17
181. Obeagu EI, Obeagu, GU. Programmed Cell Death Protein 1 (PD-1) Signaling in HIV-Associated Cardiovascular Disease: Mechanisms and Therapeutic Implications. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 61-77

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53

182. Obeagu EI, Obeagu, GU. Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Blockade and HIV-Associated Kaposi Sarcoma: A Promising Therapeutic Strategy. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 78-94
183. Obeagu EI, Obeagu GU. The Impact of Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Genetic Variations on HIV Susceptibility and Progression. *Elite Journal of Immunology*, 2024; 2(4): 18-35
184. Obeagu EI, Obeagu, GU. Antacid Use in HIV Patients: Implications for Drug Absorption, Metabolism, and Adverse Effects. *Elite Journal of Scientific Research and Review*, 2024; 2(3): 1-19

Citation: Obeagu EI, Obeagu GU. CD8 T Cells and HIV: Lessons from the Immune Battlefield. *Elite Journal of Immunology*, 2024; 2(4): 36-53