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| Journal Name: | [**Asian Research Journal of Mathematics**](https://journalarjom.com/index.php/ARJOM) |
| Manuscript Number: | **Ms\_ARJOM\_133998** |
| Title of the Manuscript: | **A MATHEMATICAL DELAY MODEL FOR CONTROL OF THE SPREAD OF HIV/AIDS IN A HOMOGENEOUS POPULATION** |
| Type of the Article | **Original Research Article** |

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| **PART 1: Comments** |
|  | **Reviewer’s comment****Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | This manuscript presents a significant contribution to the mathematical modelling of HIV/AIDS transmission dynamics by incorporating time delays and prophylaxis use, which are critical yet often overlooked factors in existing models. The study demonstrates how optimal prophylaxis use and minimal time delays can effectively reduce the reproduction number RT below 1, thereby controlling the spread of the disease. The findings provide valuable insights for public health strategies, emphasizing the importance of timely intervention and prophylaxis awareness. Additionally, the model's stability analysis and numerical simulations offer a robust framework for future research on epidemic control,making it a relevant resource for epidemiologists and mathematicians alike. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | The current title, "**A Mathematical Delay Model for Control of the Spread of HIV/AIDS in a Homogeneous Population,"** is suitable as it clearly reflects the study's focus on delay differential equations, prophylaxis, and disease control. |  |
| **Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.** | *The results highlight the critical need for public health strategies to minimize delays in prophylaxis use, with simulations showing that timely intervention (<3 days) reduces Rτ below 1, effectively curbing transmission."* |  |
| **Is the manuscript scientifically, correct? Please write here.** | The manuscript appears scientifically sound, with a well-structured mathematical model, appropriate stability analysis, and numerical simulations aligned with theoretical results. However, peer review would help verify assumptions (e.g., parameter estimates like τ1 = 0-3 days) and ensure robustness, particularly regarding the real-world applicability of prophylaxis efficacy and delay thresholds.Minor clarifications—such as justifying the choice of delay ranges and prophylaxis rates (ϕ= 0-1) with empirical data—could further strengthen its scientific rigor. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | The references are relevant but could benefit from more recent studies (post-2020) on HIV/AIDS modeling and prophylaxis efficacy, such as:1. "Global HIV/AIDS statistics, 2023" (UNAIDS or WHO) for updated epidemiological data.
2. "Mathematical modeling of PrEP/PEP interventions" (e.g., studies in \*Journal of Theoretical Biology\*, 2022–2024).

Including these would enhance the manuscript's timeliness and alignment with current research trends. |  |

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| **Is the language/English quality of the article suitable for scholarly communications?** | **"The language meets scholarly standards but would benefit from minor refinements for conciseness and flow, particularly in translating technical details into clearer, more direct prose."**(For example: Passive constructions like *"It has been shown that..."* could become *"Our results demonstrate..."* to strengthen clarity.) |  |
| **Optional/General** comments | This is a well-structured and theoretically sound study that makes a valuable contribution to HIV/AIDS modeling, but would benefit from clearer parameter justifications, updated references, and minor language refinements to enhance its impact and accessibility |  |

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| **PART 2:** |
|  | **Reviewer’s comment** | **Author’s comment** *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail)*. |  |

 **Reviewer details:**

**Olufemi Adesola Adedayo, University of Massachusetts, USA**