On the Impact of Awareness Programs in HIV/AIDS Prevention: An SIR Model with Optimal Control

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Abstract

In this work, a mathematical model for studying the impact of awareness programs on HIV/AIDS outbreak is proposed. The main idea is that people who are susceptible to infection can prevent it, if they are aware how the disease spreads and its consequences, and also the measures to control it. Various forms of communication media, educational, health institutions and non-governmental organizations play a significant role to promote HIV/AIDS awareness amongst the most concerned people, namely couples and senior secondary school children. The developed HIV model is inspired from the classical SIR epidemic model where a control function is introduced to represent the effectiveness of an awareness program. The obtained optimal control, is characterized in terms of the optimality system, based on Pontryagin

References

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HIV/AIDS model, SIR model, Optimal control, Awareness program