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Mathematics Model Approaching: Parameter Estimation of Transmission Dynamics of HIV and AIDS in Indonesia

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Abstract : Acquired Immunodeficiency Syndrome (AIDS) is one of the world's deadliest diseases caused by the Human Immunodeficiency Virus (HIV) that infects white blood cells and cause a decline in the immune system. AIDS quickly became a world epidemic disease that affects almost all countries. Therefore, mathematical modeling approach to the spread of HIV and AIDS is needed to anticipate the spread of HIV and AIDS which are widespread. The purpose of this study is to determine the parameter estimation on mathematical models of HIV transmission and AIDS using cumulative data of people with HIV and AIDS each year in Indonesia. In this model, there are parameters of $r \in [0,1)$ which is the effectiveness of the treatment in patients with HIV. If the value of r is close to 1, the number of people with HIV and AIDS will decline toward zero. The estimation results indicate when the value of r is close to unity, there will be a significant decline in HIV patients, whereas in AIDS patients constantly decreases towards zero.

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