

## Abstract

This study presents a co infection deterministic model defined by a system of ordinary differential equations for HIV/AIDS, malaria and tuberculosis. The model is analyzed to investigate the potential impact of counseling and treatment on disease progression by carrying out sensitivity analysis of the reproduction number with respect to counseling and treatment. The sensitivity indices of the reproduction numbers  $R_H$ ,  $R_{HM}$ ,  $R_{HT}$  and  $R_{HMT}$  with respect to treatment and counseling for the HIV/AIDS individuals showed that counseling is the most sensitive parameter in controlling the co infections.