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Modeling the Effect of HIV/AIDS Stigma on HIV Infection Dynamics in Kenya.

Stigma towards people living with HIV/AIDS (PLWHA) has impeded the response to the disease across the world. Widespread stigma leads to poor adherence to preventative measures while also causing PLWHA to avoid testing and care, delaying important treatment. Stigma-induced behavior therefore lowers treatment rates in a community while increasing transmission rates and death rates. Levels of HIV/AIDS-related stigma are particularly high in sub-Saharan Africa, which contributed to a surge in cases in Kenya during the late 20th century. Since the early 21st century the United Nations and governments around the world have worked to eliminate stigma from society. Resulting public health education campaigns have improved the perception of PLWHA over time, but HIV/AIDS remains a significant problem, particularly in Kenya. We formulate a system of ordinary differential equations to model the effect of stigma on the spread of HIV in Kenya. We measure how stigma is changing over time using survey data, estimate parameters for our model using time-series data, and consider the impact of a changing stigma level on disease dynamics. Our results compare model output from various hypothetical scenarios and quantify the impact of HIV/AIDS-related stigma in Kenya. (Received September 15, 2020)