



A co-interaction model of HIV and syphilis infection among gay, bisexual and other men who have sex with men

INTRODUCTION

Recent increases in sexually transmitted infections among gay, bisexual and other men who have sex with men (gbMSM) have highlighted the importance of understanding how HIV and syphilis interact. In BC, it is estimated that almost half of gbMSM in BC with syphilis diagnoses and known HIV status in 2016 were HIV positive; of concern as coinfecting individuals are more likely to transmit HIV to their sexual partners and to progress to more serious stages of both infections. Therefore, further research on these topics is warranted.

METHODS

We develop a mathematical model to study the co-interaction of HIV and syphilis infection among gbMSM.

FINDINGS

- Both diseases die out or co-exist whenever their transmission rate decreases to less than one person infected per case
- HIV infection impacts syphilis prevalence negatively and vice versa
- One possibility of lowering the co-infection of HIV and syphilis among gbMSM is to increase both testing and treatment rates for syphilis and HIV infection, and to decrease the rate at which HIV infected individuals go off treatment

PUBLIC HEALTH IMPLICATIONS

- Our study points to the benefits of treatment and prevention of HIV and syphilis to reduce the infection rate for both diseases among MSM
- Increasing the testing and treatment rate of individuals with syphilis may sufficiently decrease the transmission rate to eradicate the disease among mono-infected individuals in the community

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