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Trichomonas vaginalis epidemiology: parameterising and analysing a model of treatment interventions

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Abstract

Background: *Trichomonas vaginalis*, which affects at least 170 million individuals globally, may increase the risk of transmission of HIV and predispose pregnant women to premature rupture of membranes and early labour.

Objective: To more clearly define the epidemiology of trichomoniasis and to develop a mathematical model of disease transmission dynamics in order to explore various treatment strategies.

Design: A deterministic model of trichomoniasis was constructed. Parameter values were set to fit the model to known endemic prevalence levels of *Trichomonas vaginalis*. Two treatment interventions ("screening" and "syndromic management") were simulated.

Results: The age specific prevalence of the disease was seen to differ from other STDs in a number of studies. Parameter fitting indicates that the average duration of infection in women is at least 3–5 years and approximately 4 months for men. "Syndromic management" (that is, treating only those with symptoms of disease) had minimal effect upon the endemic prevalence of disease even at high levels of coverage. "Screening" (that is, identification of individuals with both symptomatic and asymptomatic infection) was shown to be the most efficient method of control, but was sensitive to the screening interval.

Conclusions: The control of trichomoniasis seems to have been a success in developed countries because of the regular access to health care, whereas it has remained endemic in many developing countries where control may only be possible by regular screening and treatment. However, without a large investment in services, success in controlling trichomoniasis is likely to be transitory.

Key Words: HIV; trichomoniasis; Trichomonas vaginalis; mathematical modelling; screening; syndromic management

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