

Boğaziçi
MATH GRAD SEMINAR

A mathematical model to compare mass ivermectin treatment and vector control policies for river blindness (Onchocerciasis)

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Abstract:

In this talk, we investigate the dynamics of river blindness (Onchocerciasis) with an SEIR epidemiology model. Onchocerciasis is a parasitic disease caused by a filarial worm (*Onchocerca volvulus*) and transmitted through blackflies (*Simulium Latreille*). The transmission mechanism of the disease is mathematically modelled by a system of ODEs. We take the effects of mass drug policies (ivermectin), vector control strategies, and different treatment rates for exposed and infected individuals into account to assess the effectiveness of these methods. Mass drug policies, although they are safer, take considerably longer to wipe out the parasite. On the other hand, vector control strategies eliminate the transmission of the parasite rather quickly but result in mass human casualties. In light of our simulation results, we propose a strategy that uses a combination of both of these methods.

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