

Population biology of *Schistosoma*, its control and elimination. Insights from data analysis, modeling and computation

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Schistosoma is a parasitic worm that circulates between human and snail hosts. Multiple biological and ecological factors contribute to its spread and persistence in host populations. The infection is endemic in many parts of the world, and WHO has made its control and elimination one of top priorities. Extensive control-surveillance studies were conducted in several countries to identify efficient strategies, but the results are inconclusive. One particular vexing issue is the existence of “hotspots” resilient to control. The NTD (neglected tropical diseases) modeling consortium was tasked with developing mathematical models and tools to address these issues. The talk will review general methodology of macroparasites modeling in the context of schistosomiasis, starting with conventional approaches, to more detailed stratified worm burden (SWB) approach which takes into account host-parasite biology and snail environment. The SWB model will be applied to data analysis (calibration, validation), and the study of control intervention. Among other topics, I will discuss its applications to critical assessment of the current WHO guidelines, and development of efficient adaptive control/monitoring strategies.

References

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