

Title

Relationship between the worm burden and egg output in liver fluke infections in humans

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Abstract

A general problem in the epidemiology of human-infective parasitic helminths is the relationship between observed measures of infection, such as egg counts or antigen concentrations, and the worm burden within hosts. Here we quantify the relationship between the worm burden and observed egg counts for the carcinogenic liver fluke (*Opisthorchis viverrini*) through a re-analysis of worm expulsion and autopsy studies. Using a Bayesian inference framework, we estimate the density dependent relationship between worms and eggs. The results from our best fitting model show that a single worm expels around 27 eggs per gram of stool, and 100 worms expel around 2500 eggs per gram of stool. In addition we obtain estimates of key epidemiological parameters, such as the mean worm burden, the negative binomial dispersion of worms, and the proportion of worms recovered by expulsion. These results will allow an individual's worm burden to be estimated from routinely collected survey data and so provide an insight into the effect of public health interventions on mean worm burden and parasite transmission.

Preliminary Figures



