

Controlling schistosomiasis: buffalo or snails?

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A parasitic infection common in China and Southeast Asia could be effectively reduced by controlling snail populations, according to research published in *PLoS Medicine*.

Infection with schistosomes of various species affects some 200 million people worldwide, and can cause serious chronic illnesses, including liver failure. Steven Riley of the University of Hong Kong and collaborators analyzed infection patterns of the parasitic worm *Schistosoma japonicum* in fifty villages in Samar Province, the Philippines. Rates of infection among humans and animals have been found to differ among villages, and the researchers developed a mathematical model incorporating fecal parasite test results from thousands of people and animals (including, cats, pigs, dogs, water buffalo, and rats) to explain these differences.

Schistosomes are passed from mammals to fresh-water snails via feces, and then cycle back to infect mammals that contact water inhabited by infected snails. Using the mathematical model, the team found that transmission from snails to mammals was a more important factor in explaining the differences among villages than transmission from mammals to snails.

As with all scientific models, the findings of this one depend on the assumptions made to build the model. Nevertheless, the findings suggest that interventions to reduce the size of the snail population and the exposure of mammals to parasite-containing water might reduce human

infection levels more effectively than interventions that interrupt other parts of the parasite's life cycle.

The results also indicate that the contribution of water buffaloes to human *S. japonicum* infection in the Philippines is not particularly important. This finding contrasts with a recent study that identified water buffalo as the major mammalian reservoir for *S. japonicum* in China.

(<http://www.who.int/bulletin/volumes/85/7/06-034033/en/index.html>), and suggests that further studies of the transmission of *S. japonicum* by water buffalo are warranted before efforts are dedicated to treat or vaccinate water buffalo as a control measure against human *S. japonicum* infection.

In a related perspective article, Song Liang and Robert Spear, who were not involved in the study, discuss the findings and conclude that the “modeling approach can be a useful tool in exploring schistosomiasis transmission in other settings, and may even apply to other macroparasites.”

Citation: Riley S, Carabin H, Belisle P, Joseph L, Tallo V et al (2008) Multihost transmission dynamics of *Schistosoma japonicum* in Samar Province, the Philippines. *PLoS Med* 5(1): e18.

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