Global health lessons from Thailand's successful liver fluke elimination campaign

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Young Thai schoolchildren crowding around a specimen during a liver fluke infection presentation. Credit: Banchob Sripa

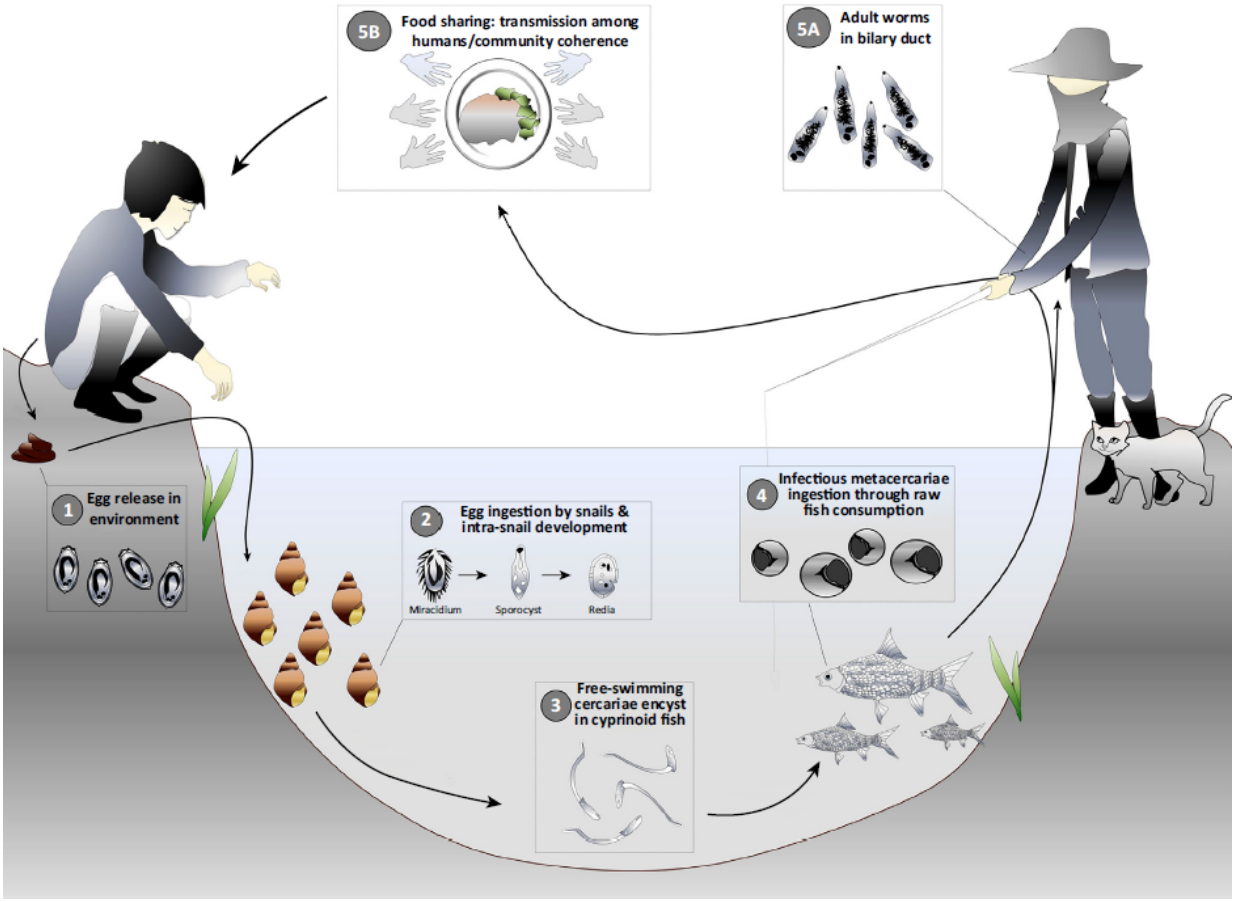
Outreach and education efforts can play an outsize role in disease

elimination programs, researchers suggest in a review publishing July 25 in *Trends in Parasitology*. As a case study, they consider recent public health efforts in Thailand, using everything from village-wide presentations to children's comics, to elaborate traditional song-and-dance routines to try to stamp out infections caused by the parasitic liver fluke.

Barely the length of a fingernail, the Southeast Asian liver fluke is a flatworm that thrives in the freshwater lakes and rivers of the Mekong basin. In its parasitic life cycle, it first infects snails, next cyprinid fish such as minnows and carps, and finally humans, often through consumption of koi pla—a popular salad of raw fish, red ants, lime juice, and spices. The parasites can cause cholangiocarcinoma, a highly lethal bile duct cancer that is rare in the Western world but nearly 50 times more common (85 cases per 10,000 people) in Northeast Thailand, a hotspot of liver fluke infestation.

Cancer researcher Banchob Sripa, a professor at Khon Kaen University, began engaging with villages still affected by liver flukes about 10 years ago, when there was little to no progress in sight. "I myself grew up in a poor family in Northeast Thailand where the disease is endemic," he says, "And when I started working with communities in my province, I found that the liver fluke problems still persisted with nearly three-quarters prevalence in certain villages, despite over 30 years of Thai government campaigns against the parasite."

Sripa and co-author Pierre Echaubard of the Global Health Asia Institute argue that a flaw of early campaigns was that they focused exclusively on the medical relationship between human host and liver fluke parasite. Social and ecological factors—including cultural traditions of raw fish sharing, farming practices and open sewer systems that let the parasite flourish in community ponds, and a lack of community education about parasite transmission—went unaddressed.



This figure shows a diagram of the liver fluke transmission cycle. Credit: Sripa and Echaubard

After several years of observing a liver fluke control model designed by Sripa and his colleagues, the Thai government officially rolled out a new campaign in 2016 addressing the complexities of liver fluke infestation. Instead of trying to stamp out food sharing among healthy individuals, an ingrained cultural practice that strengthens community bonds, they encourage the deceptively small change of sharing cooked fish dishes in place of raw ones. They take education efforts into classrooms and village meetings, distributing posters and comics explaining the risks

posed by the parasite. They attempt to disrupt the liver fluke transmission cycle at multiple points, in particular the open defecation practices that transfer fluke eggs back into water sources.

Though agricultural intensification and climate change could pose new challenges for managing liver fluke transmission, early results in the afflicted Lawa Lake region are promising, with human infection rates in the worst-hit areas down to below 10%, fish infection rates dropping from 70% to below 1%, and no infected snails detected. Sripa is optimistic that the campaign's combination of educational efforts and medical anthelmintic treatments has led to a tipping point. "The success of the control program drives me to expand the model to our neighboring Mekong countries like Laos, Cambodia, and Vietnam," he says. "I believe that with intensive integrated intervention using this EcoHealth/One Health approach, we can eliminate the entire infection within 10 years," he says.

Dr. Banchob Sripa gives a community presentation about liver fluke infection and the Lawa model. Credit: Banchob Sripa

The greatest lesson for other public health campaigns, he says, is that "top-down policy alone is not sustainable. We need to empower communities to take care of themselves with support from the government rather than just giving and expecting change to happen."

More information: *Trends in Parasitology*, Sripa and Echaubard: "Prospects and Challenges Towards Sustainable Liver Fluke Control" www.cell.com/trends/parasitolo … 1471-4922(17)30138-1 , DOI: 10.1016/j.pt.2017.06.002

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