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Addressing schistosomiasis in the Philippines: Need for a coordinated intersectoral effort

To the Editor: Abeleda *et al.*[1] recently argued in a perspective article that the Philippines should do better in order to achieve its goal of reducing schistosomiasis incidence to zero in humans, animals, and snails by 2025[2,3]. The authors appropriately ascribed the need to ramp up surveillance, WASH (water, sanitation, and hygiene), and veterinary efforts. In this letter, I would like to add to the discussion that the key to achieving schistosomiasis elimination may be strengthening the veterinary public health sector and framing mitigation efforts within the One Health lens. *Schistosoma (S.) japonicum* infection is a zoonotic disease and it affects more than 40 species of animals, including livestock animals like cattle, pigs, and water buffaloes, and pets like dogs[4]. In the Philippines, the prevalence of infection in animal reservoirs remains largely unknown in most endemic areas due to the lack of concerted epidemiological efforts unlike what is being done in human hosts. In areas where studies have been done, infection rates are from less than 10% to 97% in water buffaloes tested[5–7]. Indeed, as Abeleda *et al.*[1] argued, there is a need to do better on this front.

There have been advances with regard to diagnostics in animal hosts that could be beneficial in addressing this issue. Recently, Angeles *et al.*[8] reported that a novel serological target for *S. japonicum*, rSjTPx-1 using ELISA, had near-perfect sensitivities and specificities and had high concordance with stool examination indicating its potential role for serodiagnosis in field assessments in animals. Moreover, transmission-blocking vaccines that are administered to animal reservoirs (*i.e.*, water buffaloes) have been developed and have been field tested in the Philippines. SjCTPI bovine vaccination reduced the relative risk of human infections by more than 20%[9]. Vaccination worked best when combined with mollusciciding the snail intermediate hosts which offers a 31% increase in risk reduction[9]. These novel results of research done in the Philippines offer insights that can be used in scaling up the One Health efforts for schistosomiasis elimination in the Philippines. Funding a unified effort for animal surveillance that can utilize sensitive and specific serological tests will enable us to understand the epidemiology of animal schistosomiasis in the

country. Moreover, the implementation of vaccination efforts in high-risk areas for human and animal infections can fast-track the achievement of local and national schistosomiasis control and elimination targets.

To end, I agree with the perspectives highlighted by Abeleda *et al.*[1] that there is much that needs to be done in order to get rid of schistosomiasis in the Philippines. However, I believe that the best route to take is to consider the One Health perspective in this matter. Recognizing the critical role of animal reservoirs in *S. japonicum* propagation and doing something about it is the way to go. While it will require the cooperation and collaboration of numerous government agencies from the human, animal, and environmental sides, pursuing a unified effort to get rid of schistosomiasis should be the path forward.

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Conflict of interest statement

The author has no conflict of interest to declare.

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Authors' Reply: We acknowledge the insightful comments of Tenorio on our article and agree wholeheartedly with the emphasis placed on strengthening the veterinary public health sector through a One Health approach, along with improving surveillance and WASH sector. As we highlighted in our article, schistosomiasis remains a critical public health issue in the Philippines, and the role of animal reservoirs in disease transmission cannot be ignored. Incorporating the One Health framework will provide a more comprehensive strategy, addressing not only human cases but also the infection in livestock and wildlife, which are integral in the cycle of transmission.

The integration of novel diagnostic methods for animal hosts, such as the serological tests identified by Angeles *et al.*, has been beneficial for enhancing surveillance in both human and animal populations. By improving the detection of schistosomiasis in animal reservoirs, we can better understand the scope of the disease and implement more targeted interventions. Additionally, the development of transmission-blocking vaccines for animals, when combined with environmental controls like molluscicides, shows great potential in reducing the burden of schistosomiasis.

Thus, we fully agree that a unified, multi-sectoral approach is crucial for the success of the National Schistosomiasis Control and Elimination Program. Strengthening collaborations between the public health, veterinary, and environmental sectors will ensure a more effective and sustainable path toward eliminating schistosomiasis in the Philippines. We believe that a One Health perspective will be a key in achieving this goal.

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