

Evaluating control and elimination methods of cystic echinococcosis in South America – Beyond the 2030 goals

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Aim: The World Health Organization 2021–2030 roadmap on neglected tropical diseases has proposed that intensified control be implemented for cystic echinococcosis (caused by infection with the cestode *Echinococcus granulosus sensu lato*) in highly endemic areas of 17 countries by 2030. We aim to evaluate the effectiveness of different interventions in South America, which can be quantified with a transmission model for *E. granulosus* between sheep and dogs.

Methods: We developed a multi-host, individual-based transmission model that captures the parasite population dynamics processes across intermediate hosts (sheep)—which develop infective cysts; definitive hosts (dogs) that acquire the infection from ingestion of infected offal (and harbour adult worms), and the environment, contaminated with parasite eggs. Humans are accidental dead-end hosts that can develop cysts (hydatid disease). We simulated several interventions to assess their effectiveness in reducing CE prevalence in sheep and dogs.

Results: Local control of CE can be difficult using deworming drugs alone. However, the EG95 sheep vaccine could potentially be a game changer. Management practices play a large role in shaping transmission events and can have a substantial impact on human health.

Conclusions and Future work: Part of the challenge in controlling and eliminating CE is the costs of such a programme. As hydatid disease prevalence decreases in human communities, it becomes harder to justify the cost of elimination in the zoonotic reservoirs. We will conduct a cost-effectiveness analysis on each combination of interventions to evaluate their cost against the health benefits gained.