Epidemiology of plasmodium-helminth co-infection in Africa: populations at risk, potential impact on anemia, and prospects for combining control.

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Abstract

Human co-infection with Plasmodium falciparum and helminths is ubiquitous throughout Africa, although its public health significance remains a topic for which there are many unknowns. In this review, we adopted an empirical approach to studying the geography and epidemiology of co-infection and associations between patterns of co-infection and hemoglobin in different age groups. Analysis highlights the extensive geographic overlap between P. falciparum and the major human helminth infections in Africa, with the population at coincident risk of infection greatest for hookworm. Age infection profiles indicate that school-age children are at the highest risk of co-infection, and re-analysis of existing data suggests that co-infection with P. falciparum and hookworm has an additive impact on hemoglobin, exacerbating anemia-related malarial disease burden. We suggest that both school-age children and pregnant women--groups which have the highest risk of anemia--would benefit from an integrated approach to malaria and helminth control.