Ninth meeting of the Working Group on Monitoring of Neglected Tropical Diseases Drug Efficacy

Geneva, 12 March 2020

World Health Organization

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1. Background

The World Health Organization (WHO) recommends preventive chemotherapy as a public health strategy to control and prevent morbidity due to four helminth infections (lymphatic filariasis, onchocerciasis, schistosomiasis and soil-transmitted helminthiases) and one chlamydial infection (trachoma). In 2018, global coverage of preventive chemotherapy reached 64% in endemic populations, with more than 1.1 billion individuals treated (*1*). With such a relatively large drug pressure, and one which will be continued over the next few years on the road towards elimination of neglected tropical diseases (NTDs), the potential risk of emerging resistance must be considered.

The Working Group on Monitoring of Neglected Tropical Diseases Drug Efficacy has developed a protocol to guide assessments of drug efficacy against both schistosomiasis (with praziquantel) and soil-transmitted helminthiases (with albendazole and mebendazole). It also recommends testing drug combinations and co-administering albendazole and mebendazole with ivermectin to contain the risk of emergence of resistance. Assessments are recommended in particular in areas where preventive chemotherapy programmes have attained a high coverage for more than 5 years. To date, more than 20 drug efficacy trials have been performed in 15 countries (**Table 1**). While in most countries no signs of resistance to praziquantel have been observed, in others reduced efficacy has been noted. For example, the mean *Schistosoma mansoni* egg reduction rate in schoolchildren in Uganda who had received 8 or 9 previous rounds of preventive chemotherapy was found to be significantly lower than the mean reduction rate in schoolchildren who had received 5 or a lower number of rounds of preventive chemotherapy (*2*). Similarly, in some countries, doubtful efficacy results have been reported for mebendazole against hookworm infections.

The objectives of the meeting were:

- to evaluate the reports of drug efficacy trials conducted in endemic countries during 2019;
- to discuss research updates in the area of anthelminthic resistance;
- to propose an update for the WHO manual on assessing anthelminthic drug efficacy; and
- to discuss the first draft of a document on establishing a network of laboratories to support periodic evaluation of anthelminthic efficacy in endemic countries.

The two-day meeting was condensed into one day due to the COVID-19 pandemic. Although several participants returned urgently to their home countries before the start of the meeting, many participated online. The list of participants is attached as **Annex 1** and the agenda as **Annex 2**.

Table 1. Drug efficacy trials conducted under the supervision of the Working Group on Drug Efficacy, 2010–2019

Country	Year	Drug	Target	Egg reduction rate (%)	95% confidence interval	Drug efficacy classification	Reference
SOIL-TRANSMITTED HELMINTHIASES							
Brazil	2010	ALB	*A. lumbricoides*	100.0	NR	Satisfactory	*(3)*
			Hookworm	97.5	NR	Satisfactory	*(3)*
Cambodia	2010	ALB	Hookworm	97.6	NR	Satisfactory	*(3)*
Cameroon	2010	ALB	*A. lumbricoides*	99.2	NR	Satisfactory	*(3)*
			T. trichiura	39.2	NR	Reduced	*(3)*
			Hookworm	93.0	NR	Satisfactory	*(3)*
Ethiopia	2010	ALB	*A. lumbricoides*	100.0	NR	Satisfactory	*(3)*
			T. trichiura	92.4	NR	Satisfactory	*(3)*
			Hookworm	99.7	NR	Satisfactory	*(3)*
India	2010	ALB	Hookworm	87.1	NR	Doubtful	*(3)*
United Republic of Tanzania (Zanzibar)	2010	ALB	*A. lumbricoides*	100.0	NR	Satisfactory	*(3)*
			T. trichiura	52.0	NR	Satisfactory	*(3)*
			Hookworm	95.3	NR	Satisfactory	*(3)*
Viet Nam	2010	ALB	*A. lumbricoides*	100.0	NR	Satisfactory	*(3)*
			T. trichiura	92.3	NR	Satisfactory	*(3)*
			Hookworm	100.0	NR	Satisfactory	*(3)*
Brazil	2013	MEB	*A. lumbricoides*	97.5	95.7–99.3	Satisfactory	*(4)*
			Hookworm	84.4	80.9–87.9	Satisfactory	*(4)*
Cameroon	2013	MEB	*A. lumbricoides*	99.8	99.5–100.0	Satisfactory	*(4)*
			T. trichiura	56.2	39.4–73.0	Satisfactory	*(4)*
			Hookworm	71.9	55.6–88.1	Satisfactory	*(4)*
Cambodia	2013	MEB	Hookworm	79.7	73.7–85.7	Satisfactory	*(4)*
Ethiopia	2013	MEB	*A. lumbricoides*	98.6	97.7–99.4	Satisfactory	*(4)*
			T. trichiura	65.9	57.5–74.4	Satisfactory	*(4)*
			Hookworm	65.4	55.3–75.6	Doubtful	*(4)*
United Republic of Tanzania (Zanzibar)	2013	MEB	*A. lumbricoides*	97.1	95.1–99.0	Satisfactory	*(4)*
			T. trichiura	51.2	41.3–61.0	Satisfactory	*(4)*
			Hookworm	74.6	63.8–85.4	Satisfactory	*(4)*
Viet Nam	2013	MEB	*A. lumbricoides*	93.9	91.2–96.5	Satisfactory	*(4)*
			T. trichiura	76.8	67.7–85.8	Satisfactory	*(4)*
			Hookworm	95.0	91.2–98.9	Satisfactory	*(4)*
Ethiopia	2016	ALB	*A. lumbricoides*	99.9	99.8–100	Satisfactory	*(5)*