

# UPTAKE OF PREVENTIVE TREATMENT FOR INTESTINAL SCHISTOSOMIASIS AMONG SCHOOL CHILDREN IN JINJA DISTRICT, UGANDA.

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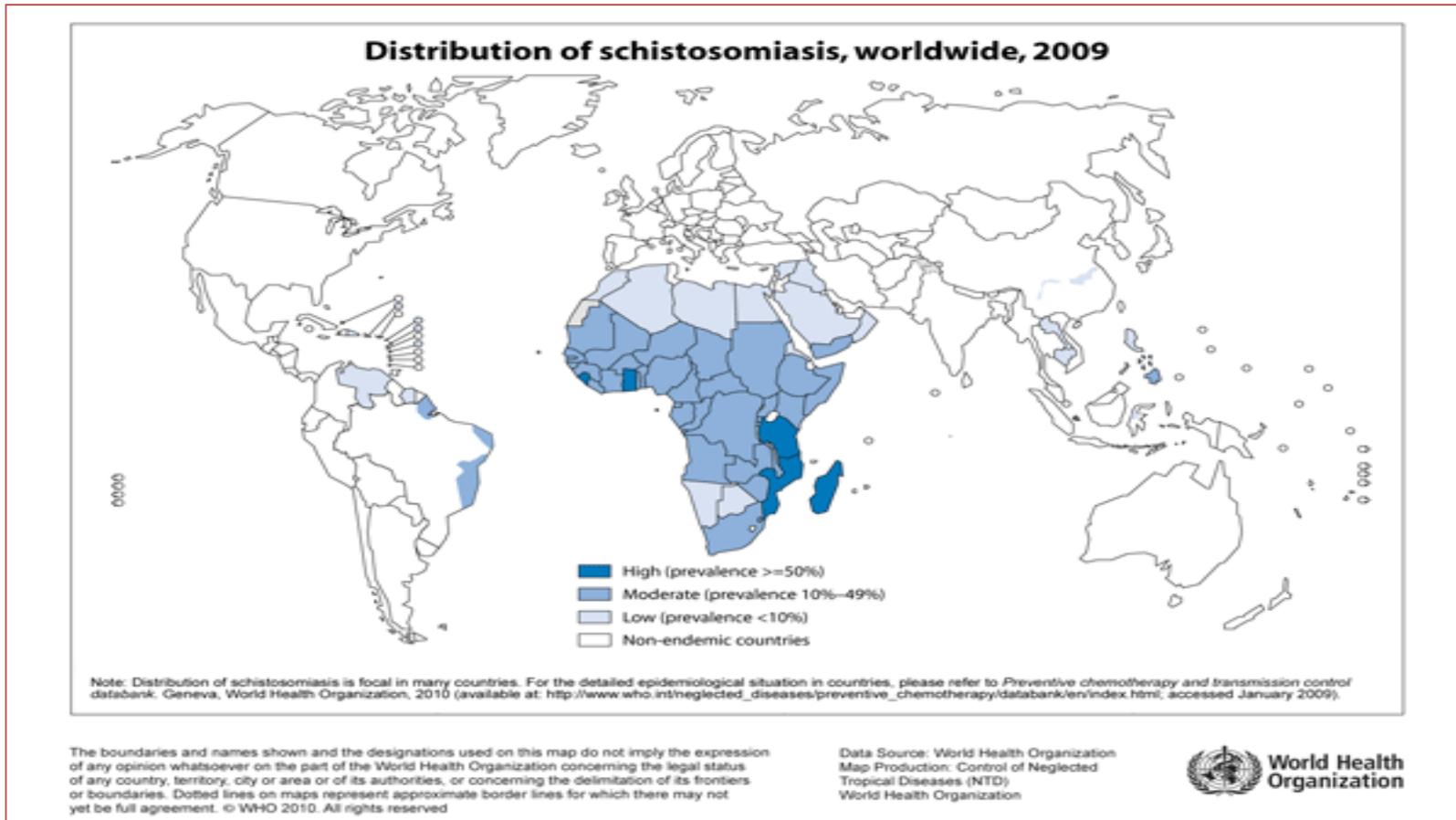
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# Introduction

## Global burden of schistosomiasis

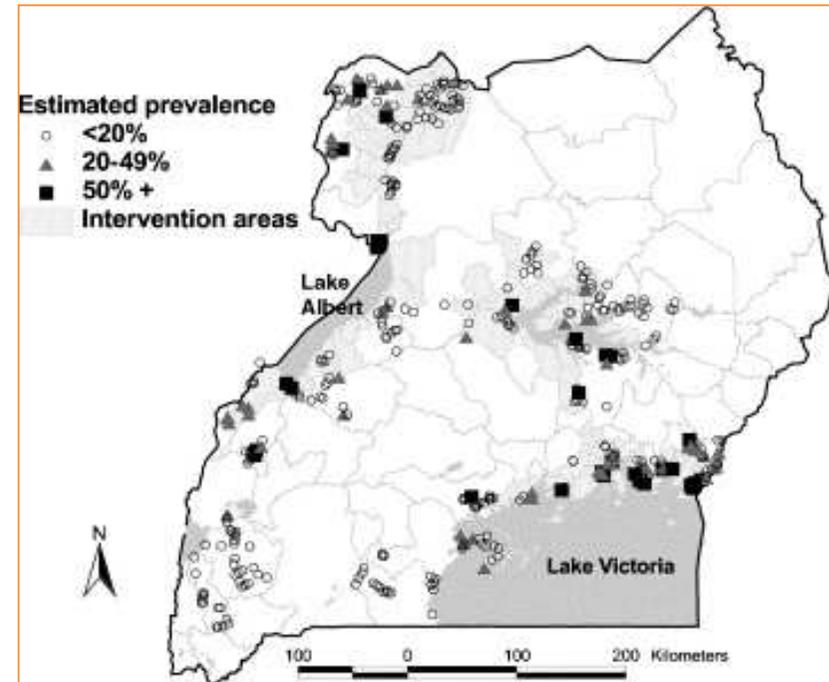


Globally, an estimated **207M** are infected with more than 700M at risk in 76 countries. It occurs in Africa, Brazil, Suriname, Venezuela and in some Caribbean Islands: **90%** of the global schistosomiasis burden is shouldered by low income countries of sub-Saharan Africa

# Schistosomiasis in Uganda

- Schistosomiasis is widespread along large lakes and rivers in 32 out of 112 districts
- Approximately 4.4 million people infected and >13% of the population at risk. The disease is more important in school-age children
- It causes sequels of long-term illness, retarded growth, impaired cognitive function and reduced productive capacity

Distribution of schistosomiasis in Uganda, (2008)

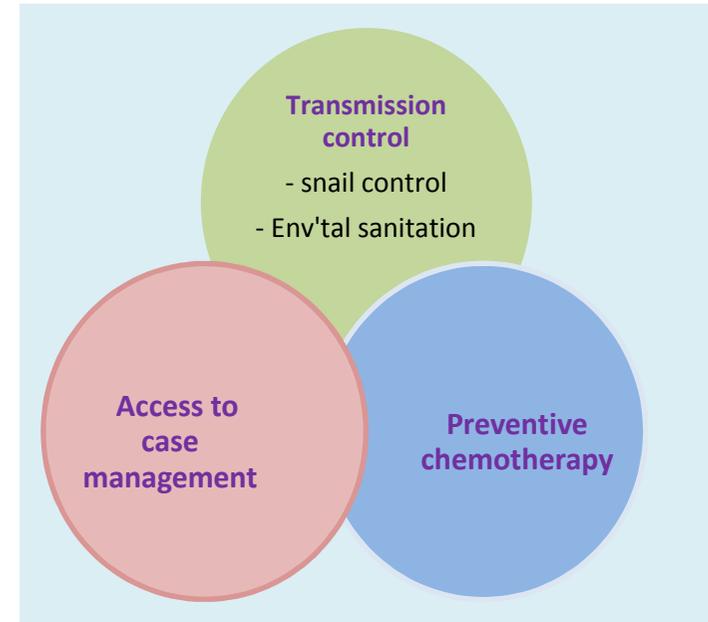


Repeated treatment in early stages has long-lasting effect on morbidity at a later stage

## Control strategies

### Minimum package for control of schistosomiasis and STH

- Increased access to preventive treatment with – praziquantel and broad spectrum antihelminthics
- Regular treatment of school-age children
- Improved access to safe water and sanitation
- Improved health behavior through health education



### WHO TARGET

Regular treatment to at least 75% of school-age children in high burden regions by 2010.

WHA resolution 54.19. May 2001<sub>4</sub>

## The Ugandan national control program

- The national Health Sector Strategic and Investment Plan (HSSIP, 2010) underscores schistosomiasis as one of the diseases targeted for elimination by the year 2015
- Annual Mass Drug Administration (MDA) with praziquantel, guided by epidemiological distribution of the infection is on-going
- Preventive measures focusing on raising awareness through IEC and health education are provided.
- Target population: school-age children and adults at risk of infection
- Treatment and health education are provided by trained teachers and community drug distributors (CDDs) in schools and communities respectively

## The Problem

- Recent studies undertaken among adults in high endemic districts in Uganda and Tanzania have reported resistance to MDA (Parker and Allen, 2011)
- Uptake of treatment among school-age children is unknown but suspected to be low.
- The economic and social context in which MDA is rolled out were highlighted as major contributors to uptake of PZQ (Parker and Allen, 2011)
  - Wide spread concern about the side effects of praziquantel
  - Inadequate educational programs for schistosomiasis control
  - Lack of quality information about schistosomiasis infection
  - Inadequate drug delivery strategies (lack of incentives for CDDs)

## **Objective of the study**

To estimate the uptake and predictors of preventive treatment with praziquantel among school children

# Study setting

- Walukuba Division, south of Jinja district
- Has a total population of 40,882
- *S. mansoni* is highly endemic. L. Victoria is the source of infection
- Main socio-economic activities:
  - Agriculture
  - Fishing
  - Petty trade b/n the main land & islands
- There are 12 primary schools



# Methods

Design	Sample size	Sampling & data collection	Study variables
Cross-sectional survey	Overall: 1,010 children from 12 primary schools	Children in classes 4-6	Socio-demographics
Six months after MDA	Based on uptake of 42%	No. selected in each school & class determined by PPS	Self-reported uptake
Quantitative methods	90% power and 95% CI	Systematic sampling used	Individual factors
	STATA 10.0 (TX, USA)	Structured questionnaire	Interpersonal factors
		Kato-Katz faecal thick smear technique used for stool	Institutional factors
			Community factors

# Results

- Self reported uptake of PZQ at last MDA was 28.2% [95% CI 25.4-30.9%]
- The intraclass correlation coefficient in the study (ICC) was 0.06
- Prevalence and intensity of *S. mansoni* infection was 35.0% [95% CI 25.4- 30.9%] and 116 epg [95% CI 98.3-137.1] respectively
- Significant variations in uptake, prevalence & intensity of infection across the 12 primary schools (Table 1).

**Table 1: Variations in Uptake of PZQ, prevalence and intensity of *S. mansoni* infection across the 12 primary schools**

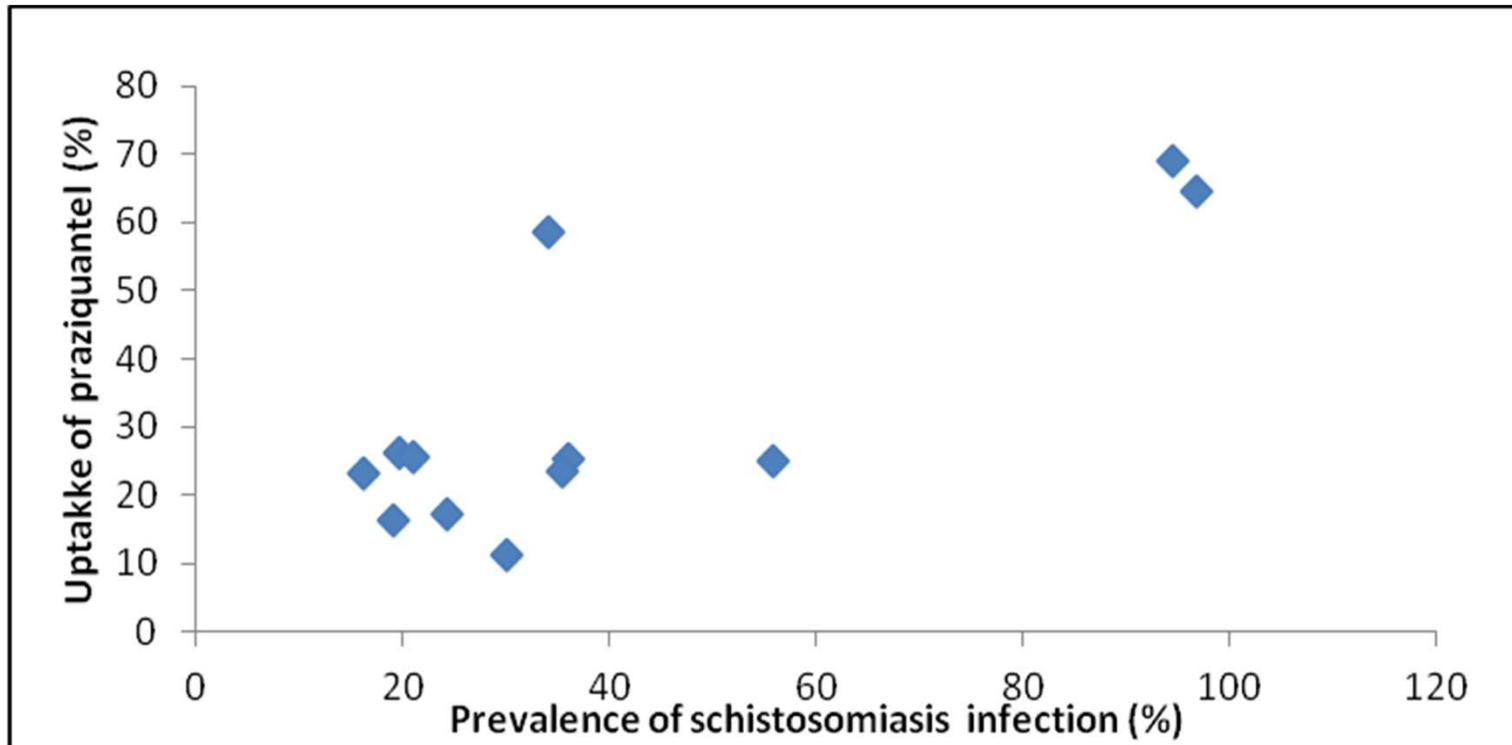
School (No)	Children examined	Uptake %, (95% CI)	Prevalence %, (95% CI)	Intensity *GM, (95% CI)
1	70	17.1 (2.08-48.4)	24.3 (14.8-36.0)	93.1 (52.0-169.5)
2	61	26.2 (7.27-52.3)	19.7 (10.5-31.8)	81.7 (46.0-145.0)
3	75	25.3 (9.14-51.2)	36.0 (25.2-47.9)	57.7 (37.4-89.1)
4	55	69.1 (51.3-82.4)	94.5 (84.8-98.9)	668.6 (472.8-945.5)
5	31	64.5 (40.7-84.6)	96.8 (83.2-99.9)	639.7 (367.8-1112.6)
6	104	25.0 (11.5-47.8)	55.8 (45.6-65.5)	84.1 (58.3-121.6)
7	107	23.4 (9.35-45.1)	35.5 (26.5-45.3)	69.6 (43.7-110.8)
8	107	11.2 (0.21-38.4)	30.0 (21.4-39.5)	89.5 (59.0-135.9)
9	82	58.5 (43.2-72.4)	34.1 (24.0-45.4)	46.3 (26.5-80.8)
10	104	16.3 (3.70-43.4)	19.2 (12.1-28.1)	85.6 (42.3-173.4)
11	110	25.5 (10.6-44.9)	21.0 (13.7-29.7)	43.5 (31.9-59.3)
12	104	23.1 (9.77-46.7)	16.3 (9.80-24.8)	46.7 (31.8-68.3)
<b>Total</b>	<b>1010</b>	<b>28.2 (22.9-33.6)</b>	<b>35.0 (25.4-37.9)</b>	<b>116.1 (98.3-137.1)</b>

\*GM (Geometric mean) is among the positive cases only

## Predictors of uptake of Praziquantel

1. Side effects of praziquantel: Of the 725 children who did not take the drug, 522 (72.0%) reported fear of side effects as the major reason for non-uptake
2. Knowledge of schistosomiasis transmission and prevention: (AOR 2.04, P=0.01)
3. Teacher support to take preventive treatment (AOR 2.63, P = 0.01)
4. Prevalence of *S. mansoni* infection: Uptake in schools with higher prevalence and intensity of infections was higher than in schools with low prevalence and intensity infection (Figure 1)

## Comparison between uptake and prevalence of *S. mansoni*



**Figure 1.** Comparison between uptake of praziquantel and prevalence of *S. mansoni*

# Conclusions

- The current MDA approach may not achieve the stated objective of the HSSIP of eliminating the infection by 2015.
- There is need to establish more effective drug delivery strategies especially in schools with low prevalence infections
- Periodic screening of school children and targeted treatment will be an essential step in minimizing drug wastages and a possible of emergency of resistance to treatment
- Implementing measures to mitigate side effects attributable to praziquantel, such as providing a snack prior to MDA and increasing teacher support may improve uptake

# Acknowledgement

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- Study team - the research assistants and laboratory technicians
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