

**Shifting the Dynamics: Integration of participatory and mathematical modelling to inform schistosomiasis control and elimination activities**

**Supplementary Materials**

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## Section 1. Participatory modelling outputs

Table S1. Participatory systems mapping full list of factors and standardisations

Factors from group systems maps (PSM exercise)	Group map	Standardised factor	Factor Type
Bachelors or unmarried bathing in contaminated water	VHT	Bathing in water bodies	Behaviours
Bathing in natural water sources	National	Bathing in water bodies	Behaviours
Bathing in water	District1	Bathing in water bodies	Behaviours
Belief that lake/river water is pure and cleansing	National	Water immersion rituals	Behaviours
Children playing in water	District1	Playing and swimming	Behaviours
Children playing/swimming	District2	Playing and swimming	Behaviours
Children playing/swimming in contaminated water	VHT	Playing and swimming	Behaviours
Community mobilisation to participate in health related issues	District2	Community mobilisation for SCH activities	Behaviours
Compliance to pzq	District1	Proportion of population ingest SCH drugs (PZQ)	Behaviours
Going for stool examination	District1	People seek care for SCH	Behaviours
Leisure activities/swimming	National	Playing and swimming	Behaviours
MDA coverage (people taking pills)	National	Proportion of population ingest SCH drugs (PZQ)	Behaviours
Mothers take children for deworming	VHT	Mothers take children for deworming	Behaviours
People seek care for sch symptoms	District2	People seek care for SCH	Behaviours
People seek consultation for sch symptoms	VHT	People seek care for SCH	Behaviours
People take sch drugs	VHT	Proportion of population ingest SCH drugs (PZQ)	Behaviours
People taking PZQ	National	Proportion of population ingest SCH drugs (PZQ)	Behaviours
Refugees or migrants bathing in contaminated water	VHT	Bathing in water bodies	Behaviours
School attendance	VHT	School attendance	Behaviours
Taking sch tx	District1	Proportion of population ingest SCH drugs (PZQ)	Behaviours
Uptake of sch meds	District2	Proportion of population ingest SCH drugs (PZQ)	Behaviours
Washing in natural water sources	National	Washing in water bodies	Behaviours
Water immersion initiation rituals, including immersive baptism	National	Water immersion rituals	Behaviours
Adequate health edu about sch	District1	Adequate knowledge about SCH in communities	Beliefs and Knowledge
Adequate health education	National	Adequate health education in the communities	Beliefs and Knowledge
Adequate knowledge on sch transmission	District1	Adequate knowledge about SCH in communities	Beliefs and Knowledge

Adequate sch knowledge in the community	VHT	Adequate knowledge about SCH in communities	Beliefs and Knowledge
Attitude about taking the sch meds	District1	Fear of side effects	Beliefs and Knowledge
Awareness about sch in communities	District1	Adequate knowledge about SCH in communities	Beliefs and Knowledge
Belief that feces deposited in the water will increase fish catch	National	Belief that faeces deposited in H2O increase fish stock	Beliefs and Knowledge
Belief that pregnant women should not use latrine	National	Belief that pregnant women should not use latrines	Beliefs and Knowledge
Cultural beliefs about outdoor defecation - esp regarding pregnant women	District2	Belief that pregnant women should not use latrines	Beliefs and Knowledge
Fear of side effects	District1	Fear of side effects	Beliefs and Knowledge
Husbands refuse wives to swallow meds	District1	Proportion of Husbands refuse wives to swallow SCH drugs	Beliefs and Knowledge
Incorrect myths about sch or sch meds	VHT	Prevalence of Myths about SCH and SCH meds	Beliefs and Knowledge
Knowledge about sch in the community	District2	Adequate knowledge about SCH in communities	Beliefs and Knowledge
Knowledge of benefits of latrine use	National	Knowledge of benefits of latrine use	Beliefs and Knowledge
Latrine beliefs (pregnant woman loses child)	District1	Belief that pregnant women should not use latrines	Beliefs and Knowledge
Religious sector dont believe in modern meds	District1	Prevalence of Myths about SCH and SCH meds	Beliefs and Knowledge
Sch education for VHTs and religious leaders	VHT	Adequate knowledge about SCH in communities	Beliefs and Knowledge
Fishing activities	VHT	Proportion Fishing without protective gear	Economic
Fishing in infested waters without protective gear	National	Proportion Fishing without protective gear	Economic
Fishing without protective gear	District2	Proportion Fishing without protective gear	Economic
Full time boat use for economic activities	National	Proportion Fishing without protective gear	Economic
Harvesting snails	District1	Snail harvesting without protective gear	Economic
Logging without protective gear	National	Proportion logging without protective gear	Economic
Migration to district for economic purposes	District2	Migration to district for economic purposes	Economic
Mongering without protective gear	District2	Proportion Fishing without protective gear	Economic
Rice farming activities	VHT	Proportion rice farming without protective gear	Economic
Rice growing/harvesting without protective gear	National	Proportion rice farming without protective gear	Economic
Snail harvesting as an economic activity	National	Snail harvesting without protective gear	Economic
Snail harvesting without protective gear	District2	Snail harvesting without protective gear	Economic
Value/price of snail shells	District1	Snail harvesting without protective gear	Economic
Availability of snails that are infected	National	Snail vector population	Environmental/Ecological
Presence of snail vectors	District2	Snail vector population	Environmental/Ecological

Adequate infrastructure for avoiding water - esp bridges	National	Infrastructure to avoid H2O, bridges	Environmental/Ecological
Adequate infrastructure/bridges for crossing water	District1	Infrastructure to avoid H2O, bridges	Environmental/Ecological
Living near water bodies	National	Households located near water bodies	Environmental/Ecological
Proper maintenance of water dams	National	Proper maintenance of H2O dams	Environmental/Ecological
Advocacy about sch at the district and national level	District2	Advocacy about SCH at the district and national level	Governance and Politics
Crackdown on illegal fishing	National	Enforcement of illegal fishing laws	Governance and Politics
Funding for sch activities	District2	Funding for SCH activities	Governance and Politics
Introduction and Enforcement of local bi-laws	VHT	Introduction and enforcement of local bi-laws	Governance and Politics
Political will to deal with sch at the LC1-5 level	District2	Political will/leadership related to SCH and WASH	Governance and Politics
Political will/leadership	VHT	Political will/leadership related to SCH and WASH	Governance and Politics
Presence and Enforcement of community bylaws	District2	Introduction and enforcement of local bi-laws	Governance and Politics
Private sector support	District2	Funding for SCH activities	Governance and Politics
Access of VHTs to fisher folk areas	District1	Proper implementation of MDA	Health System
Accurate data on sch	District1	Accuracy of SCH-related data reporting	Health System
Adequate and responsive health system surveillance system	District2	Adequate response to data	Health System
Adequate diagnostic/lab capacity	District1	Adequate diagnostic/lab capacity	Health System
Adequate logistics (time and transport) for drug distribution	District1	Proper implementation of MDA	Health System
Adequate tech staff for sch programme	District1	Proper implementation of MDA	Health System
Advocacy and mobilization within the districts	National	Health worker mobilisation for SCH activities	Health System
Appropriate quantity of PZQ for MDA	District1	Proper implementation of MDA	Health System
Available transport to sub county and parish	VHT	Proper implementation of MDA	Health System
Available transport to the district store	VHT	Proper implementation of MDA	Health System
Community acceptance of VHTs	District1	Proper implementation of MDA	Health System
Correct/adequate training for administering tx (during mda)	VHT	Proper implementation of MDA	Health System
Delays in funding and meds for MDA	District1	Proper implementation of MDA	Health System
Diagnostic capacity at health facilities - lab/clinician skills and equipment	District2	Adequate diagnostic/lab capacity	Health System
Drug stock at centre	VHT	Proper implementation of MDA	Health System
Drug stock at district store	VHT	Proper implementation of MDA	Health System
Falsification of data	District1	Accuracy of SCH-related data reporting	Health System

Food availability at time of mda or in health facilities to take w meds	District2	Food availability at time of SCH drug administration	Health System
Human resources for health at the district level	District2	Human resources for health at the district level	Health System
Irregular MDA	District1	Proper implementation of MDA	Health System
M&E related control efforts related to sch	District2	Accuracy of M&E of SCH	Health System
No dose poles or weight scales	VHT	Proper implementation of MDA	Health System
Pressure from center (national level) and donors	District1	Proper implementation of MDA	Health System
Proper case management	District2	Proportion of SCH cases with proper case management	Health System
Respect for VHT in the community	VHT	Proper implementation of MDA	Health System
Timely and accurate sch surveillance data	District2	Accuracy of SCH-related data reporting	Health System
Unmanaged sch cases (human reservoir)	District2	Proportion of SCH cases with proper case management	Health System
VHT giving the wrong dose (too low)	VHT	Proper implementation of MDA	Health System
VHT is able to pick drugs from the parish level	VHT	Proper implementation of MDA	Health System
VHT motivation	VHT	Proper implementation of MDA	Health System
VHT salary	VHT	Proper implementation of MDA	Health System
VHTs find people at home during MDA	VHT	Proper implementation of MDA	Health System
VHTs have adequate storage for drugs	VHT	Proper implementation of MDA	Health System
VHTs have adequate transport	VHT	Proper implementation of MDA	Health System
VHTs have carrying bags for drugs	VHT	Proper implementation of MDA	Health System
VHTs have stock of drugs	VHT	Proper implementation of MDA	Health System
VHTs have time to distribute drugs during MDA	VHT	Proper implementation of MDA	Health System
VHTs reach people's homes during MDA	VHT	Proper implementation of MDA	Health System
Schistosomiasis transmission	District1	Schistosomiasis transmission	Outcome
Schistosomiasis transmission	District2	Schistosomiasis transmission	Outcome
Schistosomiasis transmission	National	Schistosomiasis transmission	Outcome
Schistosomiasis transmission	VHT	Schistosomiasis transmission	Outcome
Access to sch meds	District2	Access to SCH drugs outside of MDA	Treatment
Availability of PZQ in health facilities	District2	Access to SCH drugs outside of MDA	Treatment
Availability of sch tx for U5s	District1	Availability of drug formulation for U5s	Treatment
Drug formulation for U5s	District2	Availability of drug formulation for U5s	Treatment
Effectiveness of quality or standard of drugs	VHT	SCH drug effectiveness/quality	Treatment
Missing PZQ	National	Access to SCH drugs outside of MDA	Treatment
Price of PZQ	District2	Price of SCH drugs	Treatment

PZQ is not considered an essential drug	District2	Access to SCH drugs outside of MDA	Treatment
Sch drug coverage	District1	Proportion of population ingest SCH drugs (PZQ)	Treatment
Sch drugs available at health facilities	VHT	Access to SCH drugs outside of MDA	Treatment
U5s taking sch meds	District1	Availability of drug formulation for U5s	Treatment
Access to potable water	District2	Access to potable water	WASH
Availability of bathing shelters	VHT	Availability of bathing shelters	WASH
Availability of boreholes	District1	Availability of latrines	WASH
Availability of latrines	District1	Availability of latrines	WASH
Availability of pit latrines	District2	Availability of latrines	WASH
Availability of potable water	VHT	Access to potable water	WASH
Availability of potable water	District1	Access to potable water	WASH
Cannot dig minimum 15' requirement for latrine (time, money, soil type)	VHT	Lack specs for pit latrines	WASH
Lack of boreholes	VHT	Availability of latrines	WASH
Latrine availability	National	Availability of latrines	WASH
Latrine usage	District1	Latrine use	WASH
Latrine use	National	Latrine use	WASH
Open defecating in water/stream	District1	Open defecation/urination	WASH
Open defecation	District2	Open defecation/urination	WASH
Open defecation in water	VHT	Open defecation/urination	WASH
Open urination/defecation into water	National	Open defecation/urination	WASH
People obtain water from open source	VHT	Access to potable water	WASH
Poor texture for building pit latrines	District2	Lack specs for pit latrines	WASH
Poor texture of soil at landing sites to dig latrines	District1	Lack specs for pit latrines	WASH
toilet use	District2	Latrine use	WASH
Availability and use of gum boots	VHT	Availability and use of protective gear for water work	Water Contact
Availability and use of protective gear - gum boots, gloves, overalls	National	Availability and use of protective gear for water work	Water Contact
Availability of protective gear for work in water	District1	Availability and use of protective gear for water work	Water Contact
Contact with infected water	District1	Contact with infested H2O	Water Contact
Contact with infested waters	National	Contact with infested H2O	Water Contact
Enter contaminated water	VHT	Contact with infested H2O	Water Contact
Exposure to infested water	District2	Contact with infested H2O	Water Contact
Fisher folk not using protective gear	District1	Availability and use of protective gear for water work	Water Contact

Rice and yam farmers not using protective gear	District1	Availability and use of protective gear for water work	Water Contact
Use of personal protective gear	District2	Availability and use of protective gear for water work	Water Contact

## Section 2. Mathematical modelling inputs

The primary purpose of the simulation results presented in this paper was to observe how variations (decreases in particular) in the population water contact parameter would impact the prevalence, while holding the other initialisation parameter values constant. The parameters were informed by four sources: (1) Graham et al's SCHISTOX publication<sup>1</sup>, (2) the SCHISTOX model documentation on GitHub<sup>2</sup>, (3) personal correspondence with the model developers, and (4) in consultation with workshop participants. Consultation with the workshop participants included written and verbal communication, both during the workshop and after the workshop as the parameters were specified. These communications continued through July 2021, and are ongoing as additional components of the project continue. In some cases, participants agreed that a value described in the SCHISTOX parameterisation documentation adequately reflected their contexts for the purposes of the simulation. In others cases, individual input, followed by group negotiation and consensus, determined the input value. All of the parameters were put up for discussion and confirmation by the participants, though only the ones which generated comments, and the extent of the input, are noted in the Table S2 below.

Table S2. Parameter specifications

Parameter	Initial value/specification	Source
N (population)	750	Input from workshop participants on the average most relevant population size
Time step	10	Parameterization documentation <sup>2</sup>
N communities	1	Parameterization documentation <sup>2</sup> and input from workshop participants
Density dependent fecundity	0.0007 ( <i>S. mansoni</i> ); 0.0006 ( <i>S. haematobium</i> )	Parameterization documentation <sup>2</sup> and personal correspondence with the model developers
Average worm lifespan	5.7 years ( <i>S. mansoni</i> ); 4 years for ( <i>S. haematobium</i> )	Graham et al's SCHISTOX publication <sup>1</sup>

<sup>1</sup> Graham M, Ayabina D, Lucas TCD, et al. SCHISTOX: An individual based model for the epidemiology and control of schistosomiasis. *Infectious Disease Modelling* 2021

<sup>2</sup> Graham M. Schistoxpkg.jl. 2021 <https://github.com/mattg3004/Schistoxpkg.jl>. (last accessed October 2021)



Maximum age in the population (years)	100	Confirmed by workshop participants as the most appropriate for their purposes
Miracidia maturity	24 ( <i>S. mansoni</i> ); 21 ( <i>S. haematobium</i> )	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
Contact rate	0.1	Parameterization documentation <sup>2</sup> and personal correspondence with the model developers
Max fecundity	50	Parameterization documentation <sup>2</sup> and personal correspondence with the model developers; the max fecundity and max fecundity contact rate product (below) were set based on an investigation into the system behaviour in varying these parameters for the model simulation to reach equilibrium at a high population prevalence (>50)
Max fecundity contact rate product	1/15	Parameterization documentation <sup>2</sup> and personal correspondence with the model developers; the max fecundity and max fecundity contact rate product (above) were set based on an investigation into the system behaviour in varying these parameters for the model simulation to reach equilibrium at a high population prevalence (>50)
Age contact rates	c(0.0998, 0.4563, 0.4424, 0.0015)	Parameterization documentation <sup>2</sup> and personal correspondence with the model developers; these rates are normalised to 1 across the array
Ages for contacts	c(4, 9, 15, 100)	Parameterization documentation <sup>2</sup> and confirmed by workshop participants as the most appropriate for their purposes
MDA adherence	0.9	Parameterization documentation <sup>2</sup> and confirmed by workshop participants as adequately reflecting their contexts in general; although it should be noted that the village-level participants were

		especially interested in the impacts of varying this parameter and that work is ongoing
MDA access	0.9	Parameterization documentation <sup>2</sup> and confirmed by workshop participants as adequately reflecting their contexts in general; as with MDA adherence (above), while it was agreed that this parameter would be kept defined as in the parameterization documentation for the purposes of this simulation, the village-level participants were particularly interested in observing the impacts of varying this parameter
Factor for altering the contact rate for females	1	Parameterization documentation <sup>2</sup>
Factor for altering the contact rate for males	1	Parameterization documentation <sup>2</sup>
Proportion of cercariae which are able to infect humans	1	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
Aggregation for predisposition of individuals to uptake larvae	0.24	Parameterization documentation <sup>2</sup>
Proportion of cercariae that survive from one time point to the next	1/2	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
Proportion of miracidia that survive from one time point to the next	1/2	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
death prob by age	c(0.0656, 0.0093, 0.003, 0.0023, 0.0027, 0.0038, 0.0044, 0.0048, 0.0053, 0.0065, 0.0088, 0.0106, 0.0144, 0.021, 0.0333, 0.0529, 0.0851, 0.1366, 0.2183, 0.2998, 0.3698, 1)	Parameterization documentation <sup>2</sup>

ages for death	c(1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 110)	Parameterization documentation <sup>2</sup>
vaccine effectiveness	0.95	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
drug effectiveness	0.863 ( <i>S. mansoni</i> ); 0.94 ( <i>S. haematobium</i> )	Parameterization documentation <sup>2</sup>
Specified age structure	c(8639, 9082, 6424, 5074, 4425, 3847, 3628, 3062, 2436, 1770, 1868, 1066, 743, 518, 355, 144)	Parameterization documentation <sup>2</sup>
Ages per index	5	Parameterization documentation <sup>2</sup>
Heavy burden threshold	400 eggs/1 gram faeces ( <i>S. mansoni</i> ); 50 eggs/10mL urine ( <i>S. haematobium</i> )	Graham et al's SCHISTOX publication <sup>1</sup> and parameterization documentation <sup>2</sup>
Rate acquired immunity	0	Parameterization documentation <sup>2</sup>
Human larvae maturity time (in days)	30	Parameterization documentation <sup>2</sup>
Input ages	c(4, 9, 15, 100)	Parameterization documentation <sup>2</sup> and confirmed by workshop participants as the most appropriate for their purposes
Input contact rates	c(0.032, 0.610, 1, 0.06)	Parameterization documentation <sup>2</sup>
scenario	"high adult"	Parameterization documentation <sup>2</sup> and confirmed by workshop participants as adequate for the purposes of these specific simulation activities

### Section 3. Participatory systems mapping results

Figure S1. Small group participatory systems maps: National level

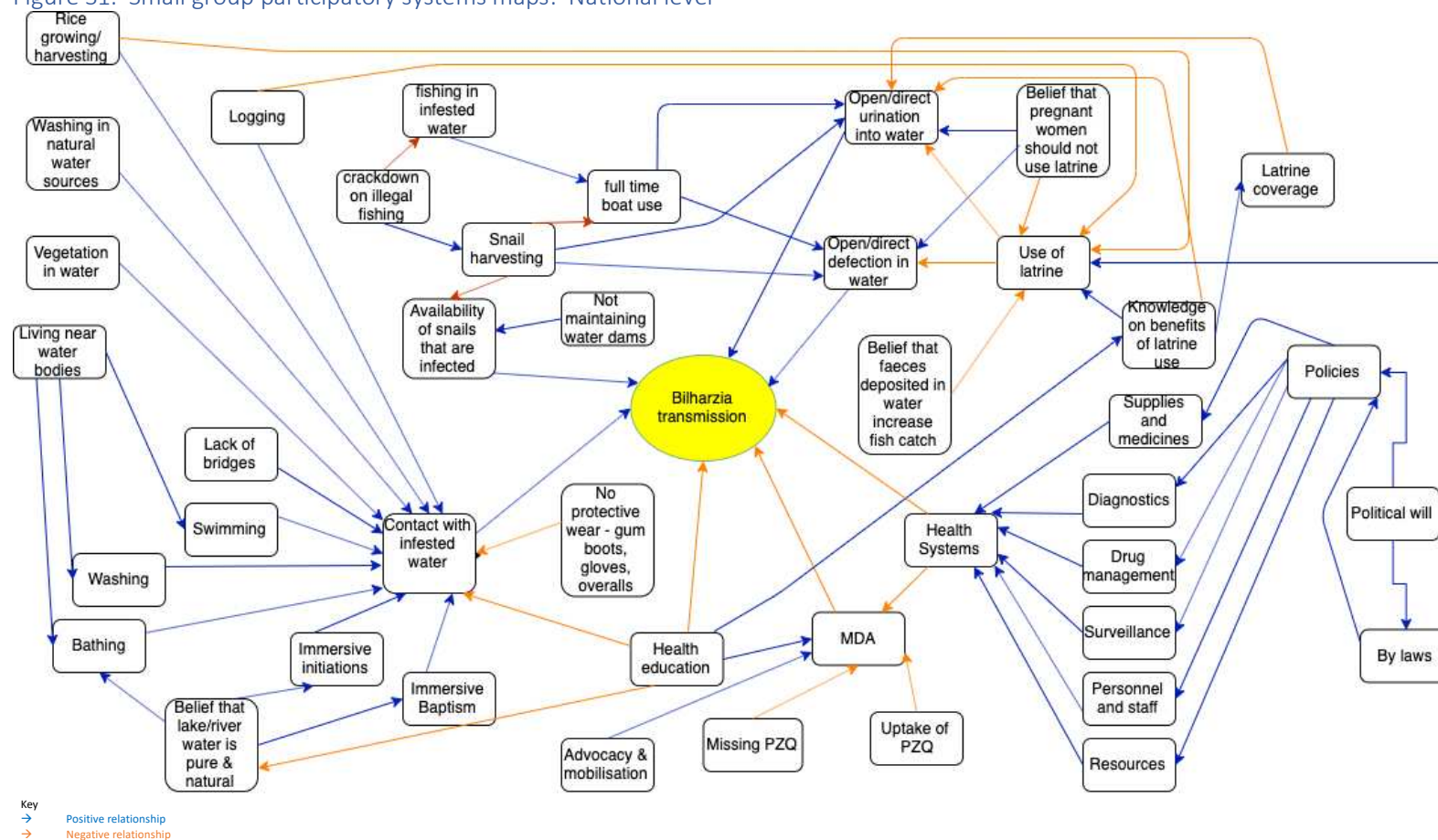


Figure S2. Small group participatory systems maps: District level 1

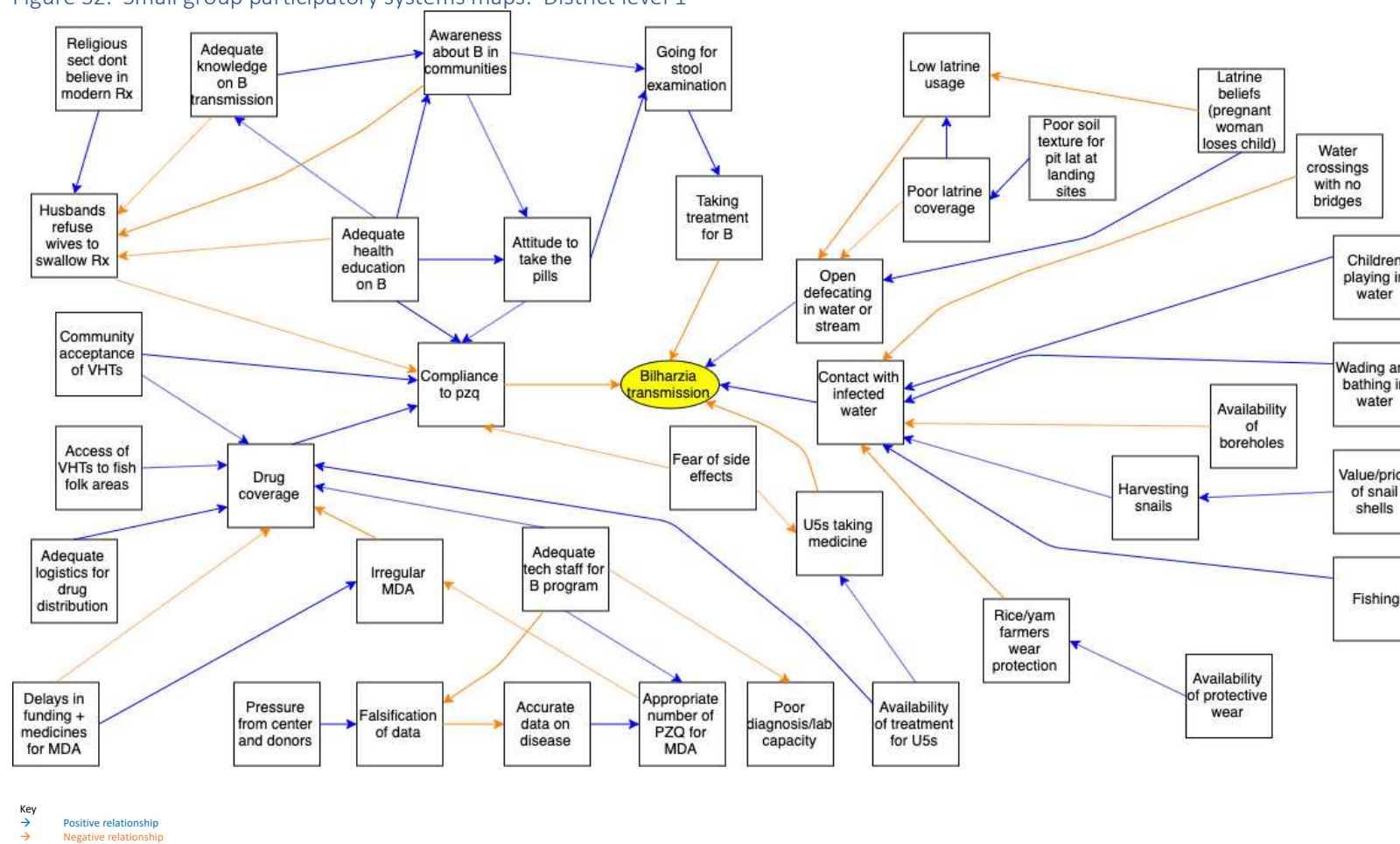


Figure S3. Small group participatory systems maps: District level 2

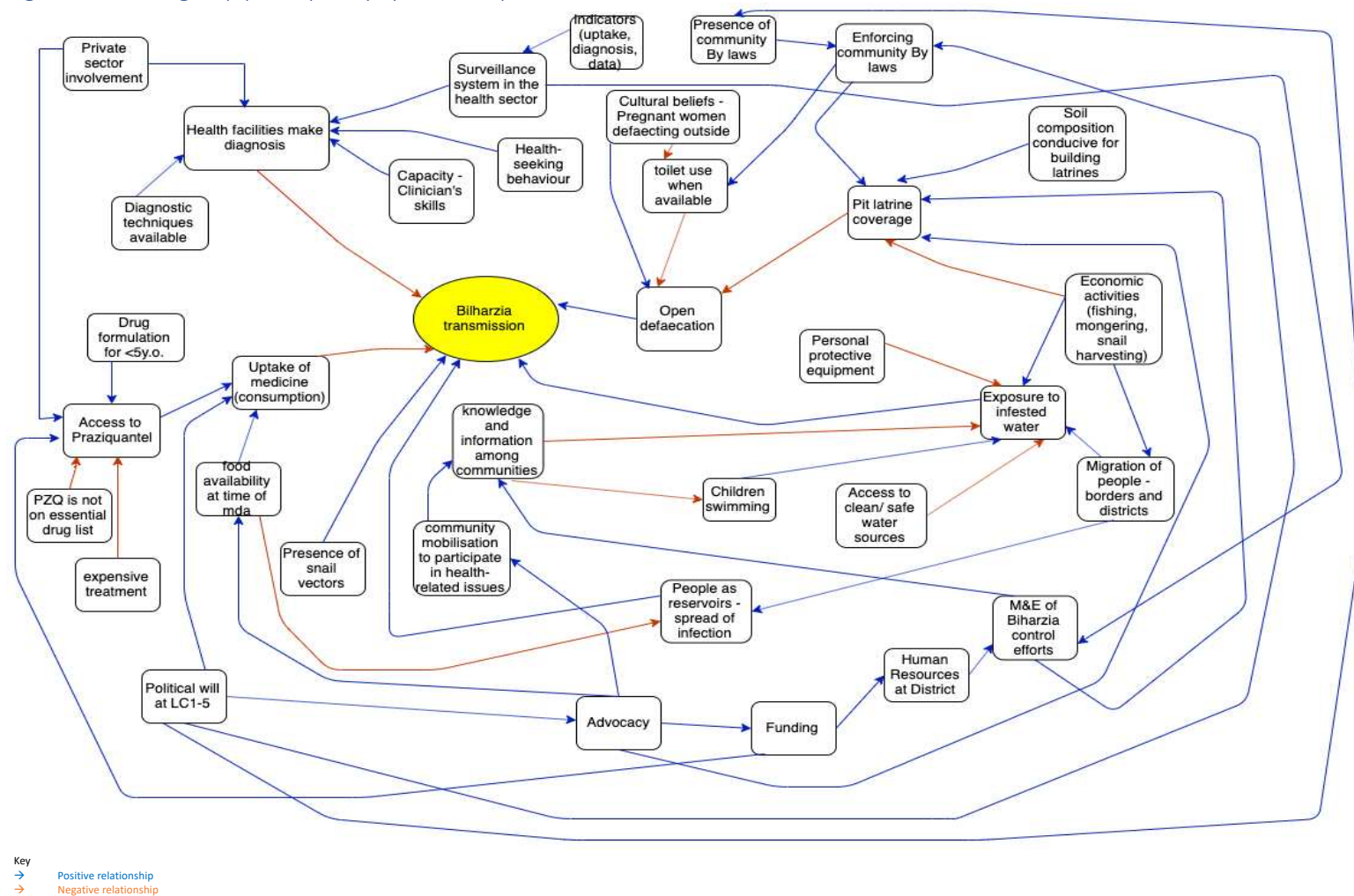
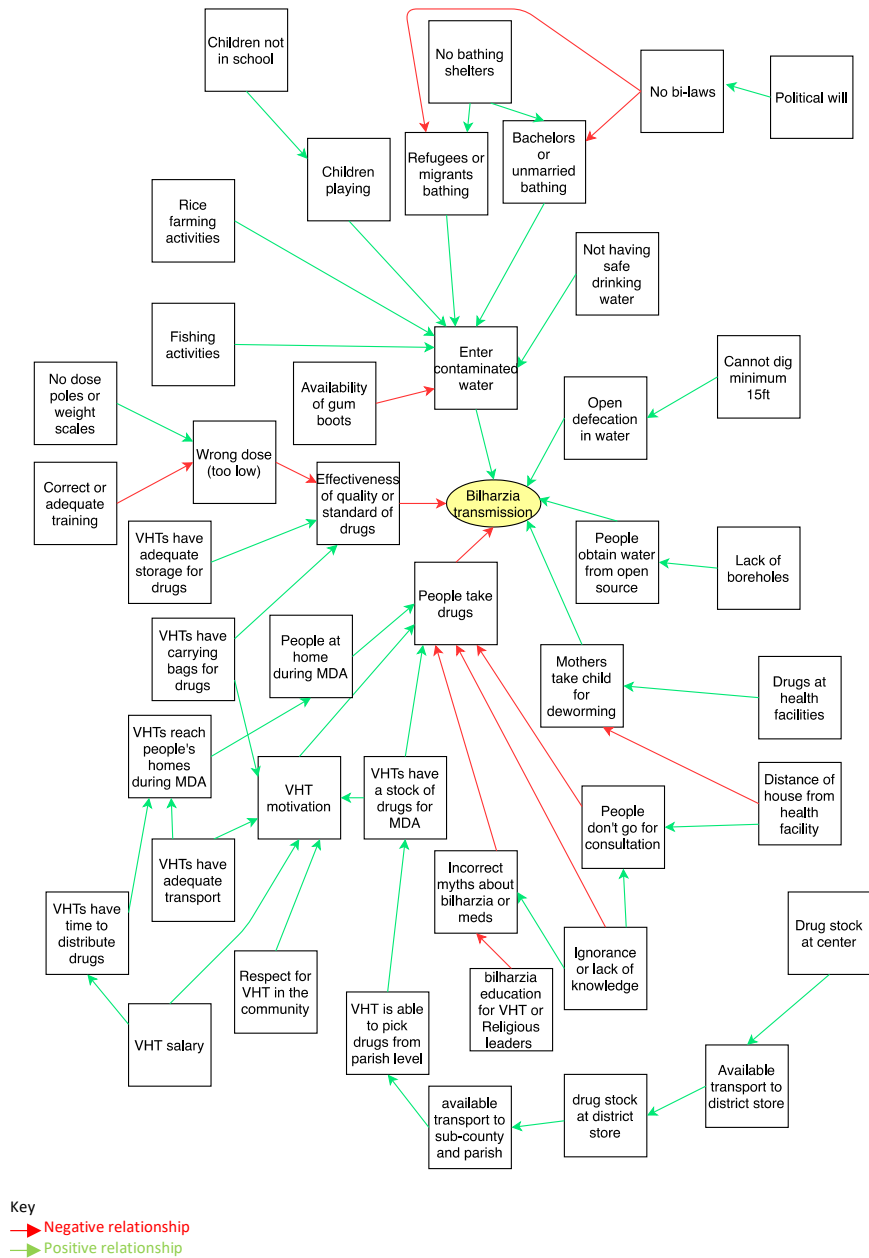


Figure S4. Small group participatory systems maps: Village level



#### **Section 4. Excerpts of commentary from workshop participants on schistosomiasis transmission and control**

##### **Theme 1: Reasons schistosomiasis transmission continues after all these years of mass drug administration**

- These people are fishing communities and so their fishing habits continue to be the same despite years of MDA. They continue to enter in the lake for fishing and other related activities, and therefore there's continuous infection and re-infection with schisto and other worms. This observation is in line with arguments that MDA alone isn't sufficient to control or eliminate schisto in endemic areas. As it is, MDA mainly focuses on treatment of people believed to be at risk of infection but does little to prevent people from being infected – at least for now, there's little or rather no evidence suggesting so.
- The behavioural change activities on schisto control is very low and seasonal, that's, it's only that time and period when there's MDA that the community gets to hear something related to schisto control. In other words, there's an uncoordinated behavioural change programs with regard to control of schisto. In so doing, key messages about how to break the lifecycle of schisto are often forgotten along the way.
- There's variation in sanitation standards in [district anonymised] and its surrounding areas. The soil textures in majority of landing sites in Uganda is sandy and so it's very difficult to dig and have long lasting pit latrines but even so, the fewer latrines dug are normally washed away during rainy seasons. So people resort to open defecation in the bush, around water streams and so on.
- Also, MDA coverage in the community is low. Most times, MDA program focuses on treatment of school going children with little attention to treating the whole community, and where the community is considered for treatment, the method of administering the drugs is not effective. The VHTs normally deploy two methods during MDA: first, is the door to door method where a VHT moves from household to household to administer drugs. This method has the following challenges. a) It is possible that a VHT may not find a single person in a household. In this case the VHT takes note of that HH for purpose of revisiting it. However, most times they (VHTs) don't revisit such HHs. b) After recording on drug register books, VHT administers drugs to HH members present and leave drugs for those missing. Here too, it comes difficult for VHTs to know whether or not the drugs would be delivered and swallowed. c) Due to fear of side effects, a family may decide not to take drugs at all. Second, is the administration of drugs in a central place. Here, VHT informs the community/village members about administration of drugs in a central place within the village. Also, considering distance and of nature of people's activities, fewer people may come for the drugs. In short, all these methods if not done with caution, have lots of unresolved issues about drug coverage, drug uptake and breaking the lifecycles of the disease.

##### **Theme 2: Actions/Interventions to minimise contact with infested water**

- There should be intensive and consistent education and behavioural change programs on schistosomiasis control in the District/region. Physical engagement with



fishing folks at landing sites and local FM radio stations should be consistently used to disseminate schisto control measures to the community. Also, posters clearly showing lifecycles of schisto should be erected in communities and messages translated in local languages like [language anonymised].

- There should be consistent and continuous sensitisation about hygiene and proper use of latrine, and where possible, the District, Sub-county, Parish and village leaders should all be involved in the dissemination of info and monitoring of compliance. Leaders mentioned therein can design Latrine Assessment Tools for purposes of showing both the coverage and use of latrines in the community. This way, HHs with sub-standard latrines can be identified and encouraged to improve, while those already cautioned but are not ready to improve after a period of time – per say 1 or 2 months can be summoned by the LC I court systems and punished for breaching minimum living standards.
- Encourage fishermen and rice growers to procure affordable water resistant gargets like gumboots so that even when they are fishing/cultivating, contact with infested water can be reduced.
- Lobby for safe water projects in the communities, like boreholes, spring water. Currently, [NGO anonymised] Field Office, is implementing a multibillion tape water project in [district anonymised] District. This project, if implemented well will help improve on the safe water coverage in the District and reduce the frequency mothers and children get into contact with infested water for domestic and other purposes.
- Install water treatment plants or equipments at landing sites so that infested water can be purified before being deemed safe for domestic use.
- Design specific programs, for example, registration and procurement of special gumboots for fishermen and rice growers so as to limit their level of exposure to schisto and other worms.
- Come up with projects that can help increase latrine coverage in the community. [NGO anonymised] for example has been constructing latrines/toilets in public places like schools, landing sites, health centres, and the organisation has been applauded for improving on sanitation and human waste disposal that would otherwise exacerbate transmission of schisto and other intestinal worms in the community.
- There should be continuous sensitisation and behavioural change activities so that the whole community gets equated with the lifecycle of schisto and how they can actively participate in eradicating it.
- Initiate and design a project that will enable fishing community diversify and engage in other welfare activities like poultry, piggery, bee keeping and so on.

## Section 5. Network analysis results

Table S3. Network centrality metrics from full map

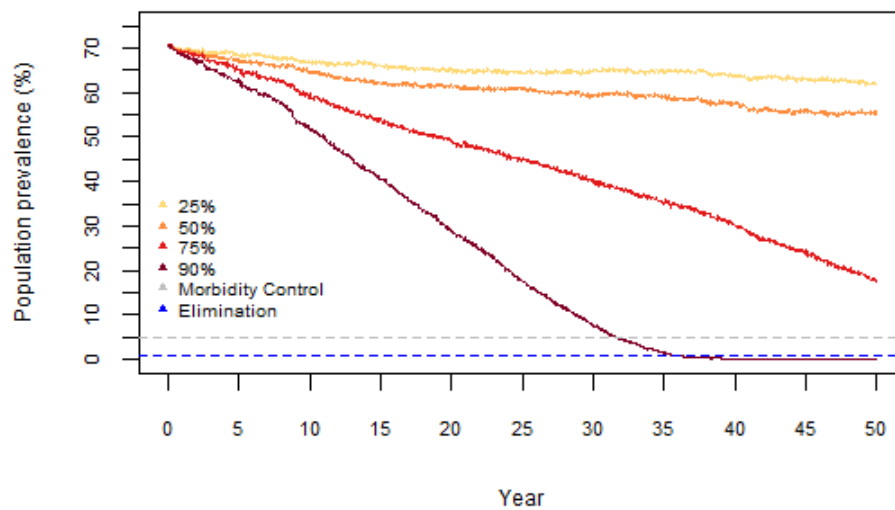
Factors	Indegree	Outdegree	Degree Centrality
Contact with infested H2O	25	4	29
Open defecation/urination	13	4	17
Schistosomiasis transmission	17	0	17
Adequate knowledge about SCH in communities	2	12	14
Latrine use	8	3	11
Proportion Fishing without protective gear	6	5	11
Snail harvesting without protective gear	4	7	11
Access to SCH drugs outside of MDA	6	4	10
Availability of latrines	3	6	9
Proportion of population ingest SCH drugs (PZQ)	8	1	9
Proportion of population ingest SCH drugs (PZQ)	8	1	9
Availability and use of protective gear for water work	1	7	8
People seek care for SCH	4	3	7
Playing and swimming	3	4	7
Access to potable water	2	4	6
Bathing in water bodies	3	3	6
Belief that pregnant women should not use latrines	0	6	6
Proportion of SCH cases with proper case management	4	2	6
Adequate diagnostic/lab capacity	3	2	5
Proper implementation of MDA	1	4	5
Proportion of Husbands refuse wives to swallow SCH drugs	4	1	5
Accuracy of SCH-related data reporting	2	2	4
Availability of drug formulation for U5s	2	2	4
Introduction and enforcement of local bi-laws	2	2	4
Political will/leadership related to SCH and WASH	0	4	4
Proportion rice farming without protective gear	1	3	4
SCH drug effectiveness/quality	3	1	4
Snail vector population	2	2	4
Water immersion rituals	2	2	4
Adequate health education in the communities	0	3	3
Adequate response to data	2	1	3
Advocacy about SCH at the district and national level	1	2	3
Community mobilisation for SCH activities	2	1	3
Funding for SCH activities	1	2	3
Households located near water bodies	0	3	3
Knowledge of benefits of latrine use	1	2	3
Lack specs for pit latrines	0	3	3

Migration to district for economic purposes	0	3	3
Mothers take children for deworming	2	1	3
Proportion logging without protective gear	1	2	3
Accuracy of M&E of SCH	1	1	2
Belief that faeces deposited in H2O increase fish stock	1	1	2
Enforcement of illegal fishing laws	0	2	2
Fear of side effects	1	1	2
Human resources for health at the district level	1	1	2
Infrastructure to avoid H2O, bridges	0	2	2
Prevalence of Myths about SCH and SCH meds	1	1	2
Price of SCH drugs	0	2	2
Washing in water bodies	1	1	2
Availability of bathing shelters	0	1	1
Food availability at time of SCH drug administration	0	1	1
Health worker mobilisation for SCH activities	0	1	1
Proper maintenance of H2O dams	0	1	1
School attendance	0	1	1

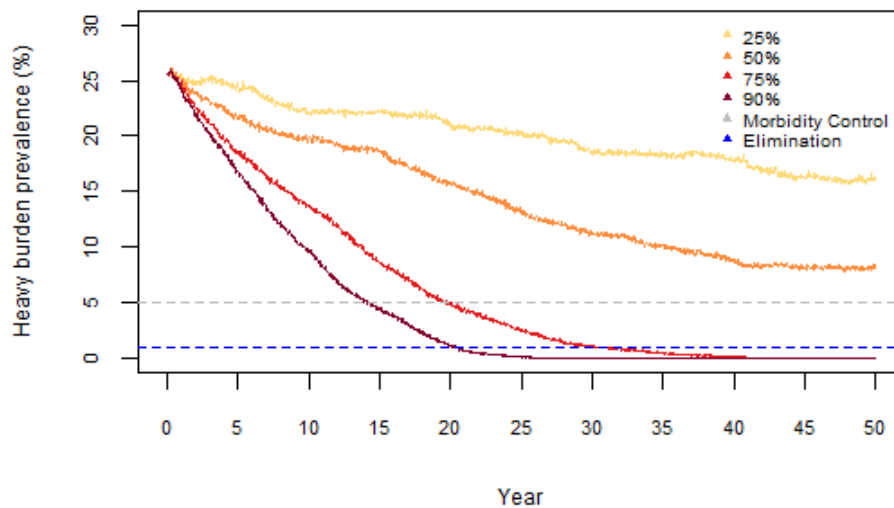
## Section 6. Water contact simulation scenario results

Figure S5. Water contact simulation scenario – High prevalence *S. mansoni* settings

### A. Population prevalence



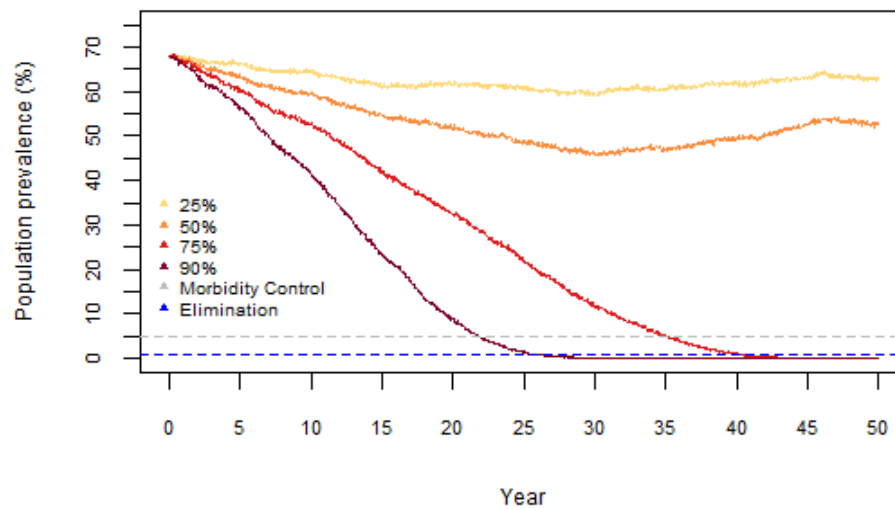
### B. Heavy burden population prevalence



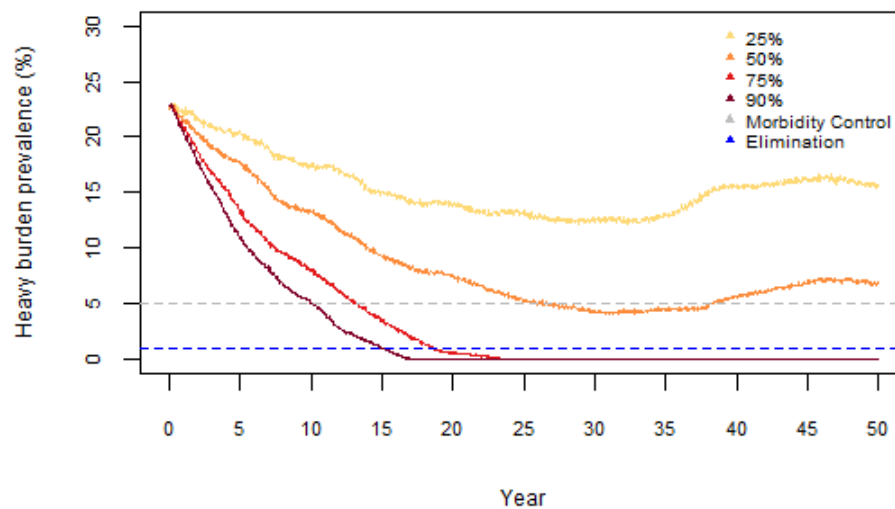
Note: Morbidity control, less than 5%; Elimination, as a public health problem, less than 1% prevalence ; 25%, 50%, 75%, 90%, reduction in infested water contact

Figure S6. Water contact simulation scenario – High prevalence *S. haematobium* settings

## A. Population prevalence



## B. Heavy burden population prevalence



Note: Morbidity control, less than 5%; Elimination, as a public health problem, less than 1% prevalence ; 25%, 50%, 75%, 90%, reduction in infested water contact