World Health Organization
REGIONAL OFFICE FOR Africa

ESPEN
EXPANDED SPECIAL PROJECT FOR ELIMINATION OF NEGLECTED TROPICAL DISEASES

OPTIMIZING SCHISTOSOMIASIS MDA IMPLEMENTATION IN COUNTRIES

Data Analysis Requirements

June 2019

Based on joint application packages (JAP) received from countries, preventive chemotherapy for schistosomiasis using praziquantel distribution is currently largely implemented at district levels. This is in a wider scale than may be needed, since schistosomiasis transmission is focalized to water contact site catchment areas. There are growing concerns around the efficiency of distribution of donated praziquantel, and sub-optimal utilization of site level data. The current work consists of analysis of selected countries where review of sub-district level datasets may result in adjusting implementation to lower levels than is currently targeted.

Table of Contents

1. Purpose

Since schistosomiasis is focal disease, implementation is mostly not needed in entire districts.

The purpose of this work is to review and propose where sub district level implementation is feasible based on available data.

2. Working Definition

For the purpose of this analysis: “Sub district level implementation” is the lowest level below the district or implementation unit that available data can allow

“District” is the implementation unit (IU) currently used by the country.

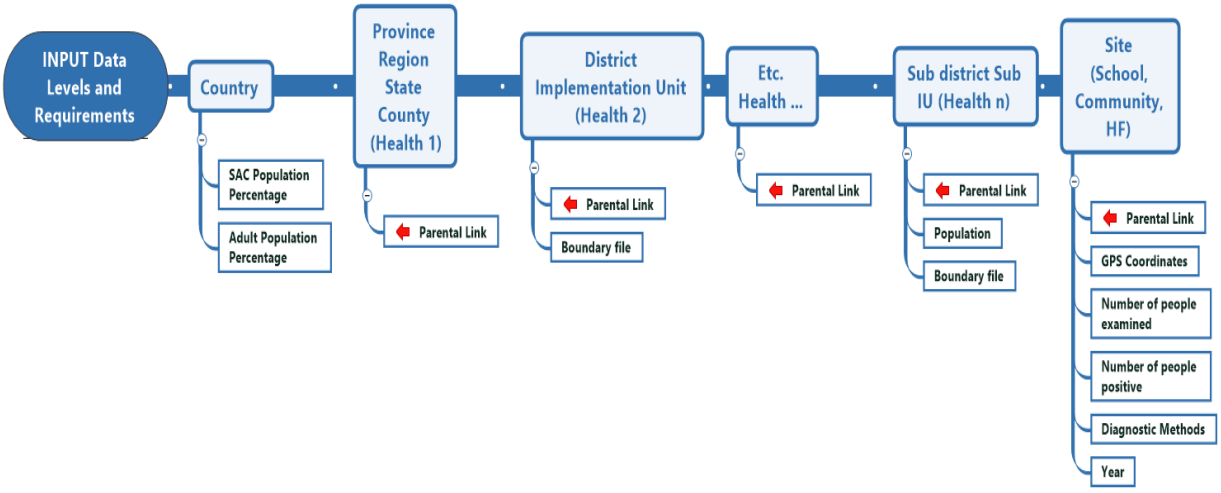
3. Data Requirements

In order to carry out successfully the sub-district level analysis to determine if implementation may be devolved to lower levels, below are the minimum requirements for the dataset:

Input Data Requirements

1. The acceptable level of detail is either the individual data or the site level (community or school) data. If it is the site level data, then the number of people examined and the number of people positive are mandatory data elements. This will ensure that district and sub district prevalence are always estimated by total positive/total examined and not average of site prevalence.
2. The lowest detailed data (described above) must be presented in hierarchical way from the lowest unit (site) to the highest health unit (district). The diagram in figure 1 below shows the data level and requirements. The parental link is mandatory.
3. In case the conditions above are not met, then there is need to have and use the GPS coordinates of the lowest data detail and the boundary file of the sub-district units to spatially link the lowest data detail to the sub-district units. This condition must be the last attempt because of some intrinsic constraints (availability of sub-district level boundary /shape files, availability, completeness and reliability of GPS coordinates, capacity to use GIS software at country level, etc.)

Figure 1: Diagram of input data level and requirements



In line with the above conditions, 3 input tables are needed:

1. **Epidemiological dataset**
    - Region/Province/State (Health 1)
    - District/IU (Health 2)
    - Sub-district name
    - Name of surveyed site
    - GPS_Lat
    - GPS_Long
    - Number of people examined
    - Number of people positive
    - Site Prevalence
    - Diagnostic methods
    - Year of survey
2. **Demographic dataset**
    - Region/Province/State
    - District/IU
    - Sub District
    - Percentage/proportion of school age children
    - Percentage/prportn of adults
    - Total Population of the sub district
    - Year of population projection
3. **Sub-district/IUs boundary files**

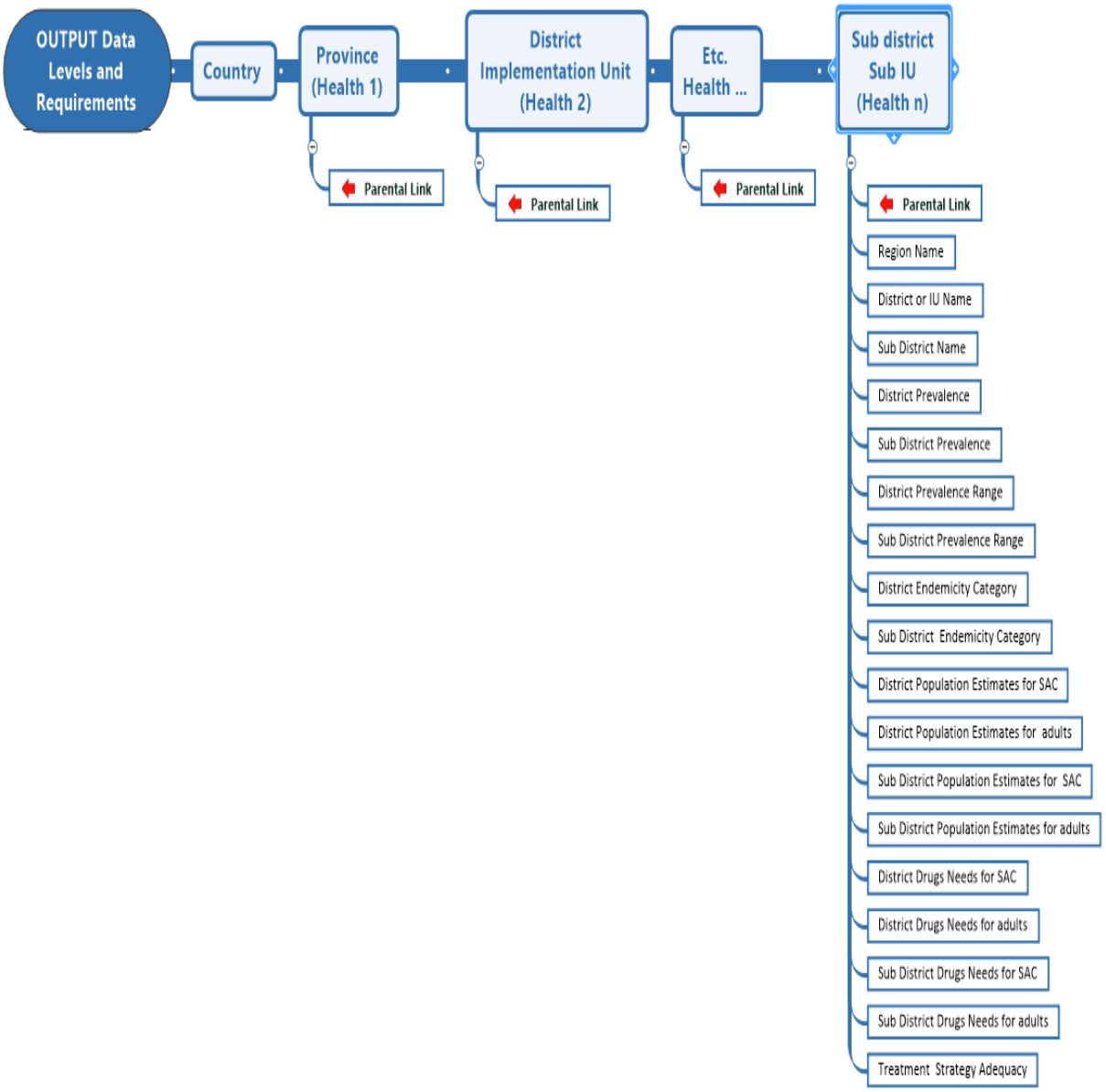
Output Data Requirements

From the input datasets, the data analysis will lead to the production of the structure below.

- Region/Province/State
- District/IU
- Sub District
- District Prevalence
- Sub District Prevalence
- District Prevalence Range
- Sub District Prevalence Range
- District Endemicity Category
- Sub District Endemicity Category
- District Population Estimates for SAC
- District Population Estimates for adults
- Sub District Population Estimates for SAC
- Sub District Population Estimates for adults
- District Drugs Estimates for SAC
- District Drugs Estimates for adults
- Sub District Drugs Estimates for SAC
- Sub District Drugs Estimates for adults
- Treatment Strategy Adequacy

The diagram in figure 2 shows the data level and requirements for the output dataset.

Figure 2: Diagram of output data level and requirements



Data Analysis and Graphics Outputs

The data analysis will be done in the way to produce evidences and facts that will help to assess the benefits and advantages of the sub district level implementations.

From the output dataset the following summary tables will be produced:

- Number of sub districts of each endemicity category both in district and sub district implementations
- Number of sub districts under, over and adequately treated
- Number of people under, over and adequately treated
- Quantities of drugs under, over and adequately used

The diagram in figure 3 indicates the analysis steps to the final outputs listed below

Figure 3: Data analysis plan and outputs

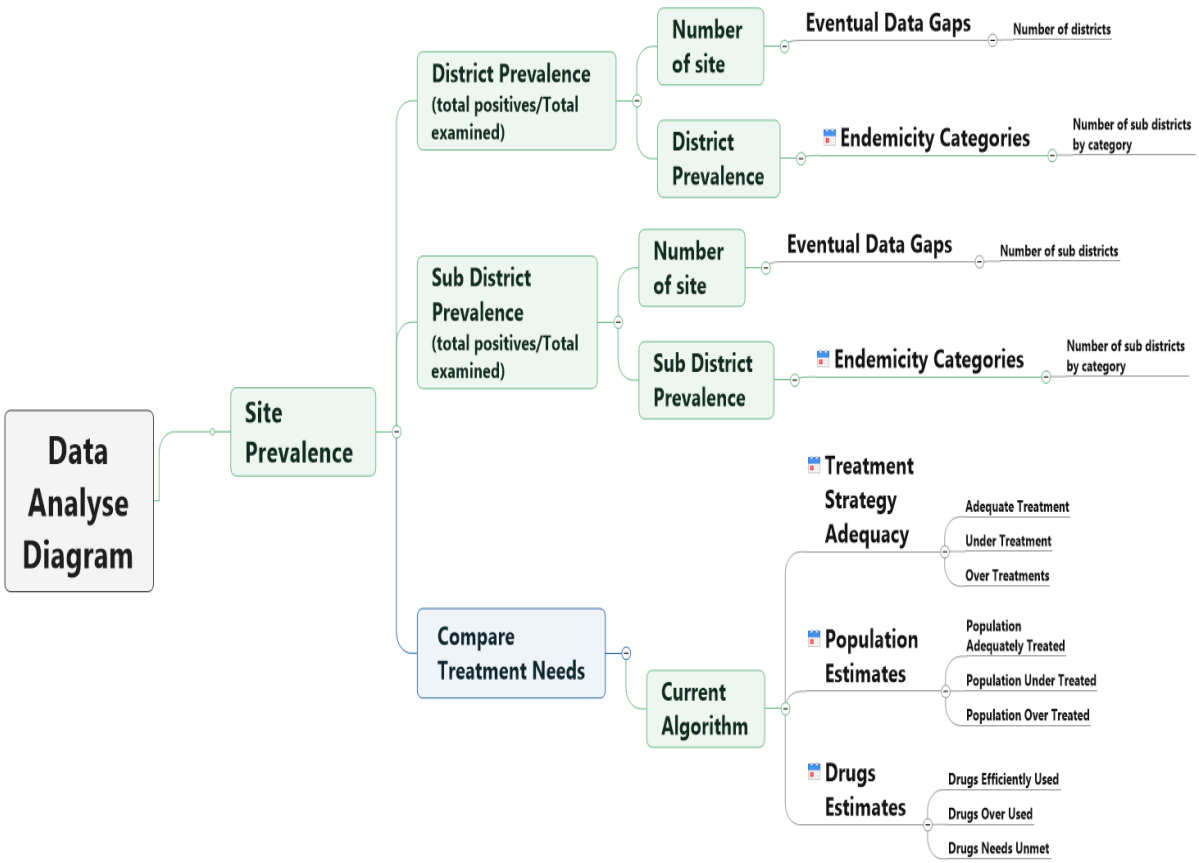
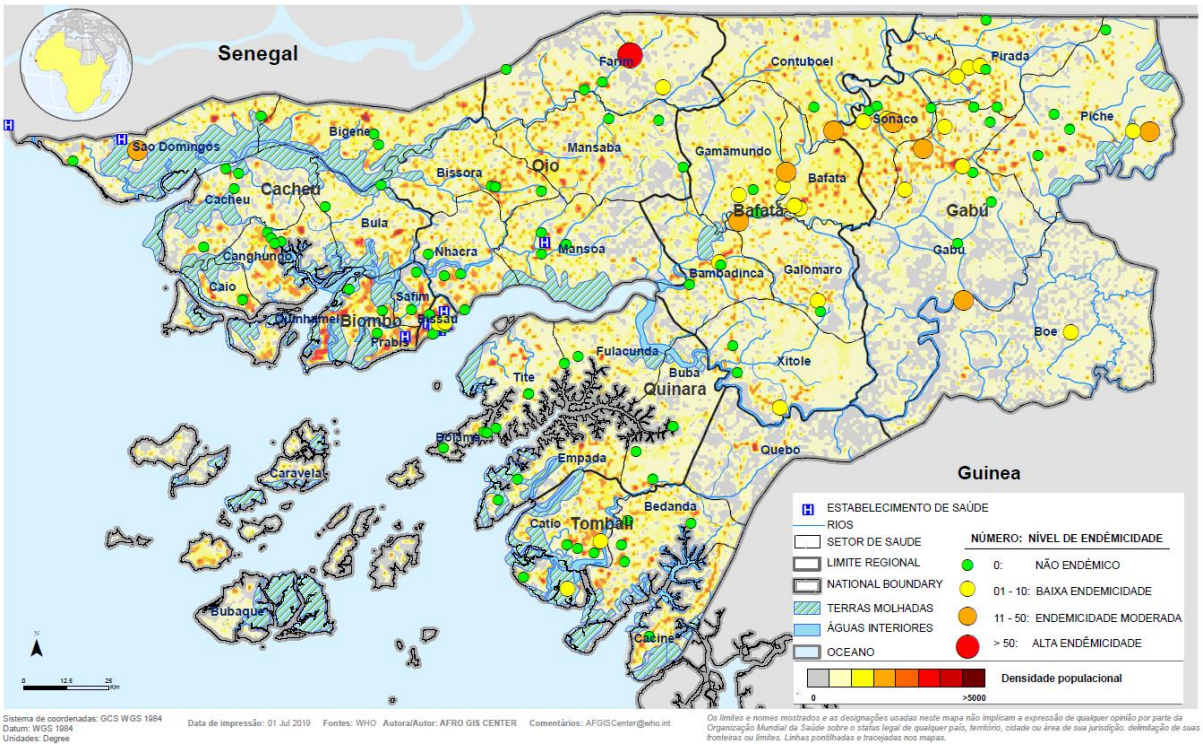


Table 1: Example of output table for the endemicity categories in both district and sub district implementations

District	Number of Sub districts	Endemicity Category by District Prevalence				Endemicity Category by Sub district Prevalence			
		Non endemic	Low	Moderate	High	Non endemic	Low	Moderate	High
District 1	5	0	0	5	0	1	3	1	0
Total									

Figure 4: Map showing site prevalence and environment ecological data that influence schistomiasis transmission (water bodies, wetlands, population density)

The figure below is a map of Guinea-Bissau showing the surveyed sites with their prevalence and environmental information such as population density, water bodies (lakes, rivers, ponds, and dams), and wetlands.



This map will help to understand and confirming information derived from the analysis.

- Sub-district mapping gap
- Adequacy of sampling (site not close to any water body)
- Based on the output in Table 1 above, the country team will utilize GIS outputs to confirm the classification presented by the site level data analysis, or adjust based on the GIS information. For example, a sub-district that has a site level prevalence of zero, may be confirmed as non-endemic if GIS information shows absence of water bodies or wetlands, while a sub-district where there's no site level data but falls in the same ecological zone as a neighbouring one which is endemic, may be assigned the same endemicity

Table 2: Changes of treatment strategies from district level implementation to sub district level implementation

Sub District Classification					
District classification	# of sub-districts	Non endemic	Low	Moderate	High
Non endemic	10	0	0	0	0
Low	25	10	2	5	8
Moderate					
High					
Unknown					
Total					

Table 3: Treatment adequacy in district level implementation compared to sub district level implementation

District	# of sub-districts	Adequate Treatment Strategy	Over Treatment	Under Treatment	Unknown
District 1	10	1	1	3	5
Total					

Table 4: Population estimates in district level and sub district level implementation

District	# of sub-districts	District Population requiring PC SAC	District Population requiring PC Adults	Sub District Population requiring PC SAC	Sub District Population requiring PC Adults
District 1					
Total					

Table 5: Drug estimates in district level and sub district level implementations

District	Number of sub districts	District Drug Estimates for SAC	District Drug Estimates for Adults	Sub District Drug Estimates for SAC	Sub District Drug Estimates Adults
District 1					
Total					

Table 6: Total Population and Drug estimates in district level and sub district level implementations

Estimates	# of sub-districts	District Estimates for SAC	District Estimates for adults	Sub District Estimates for SAC	Sub District Estimates for adults
Population					
Drugs					

Table 7: Overused drugs against medicine gap

District	Drug estimates for SAC in district implementation	Drug estimates for SAC in sub-district implementation	Medicine gap (additional drugs needed where under treatment occurred in district implementation)	Drugs overused (drugs used unnecessary where over treatment happen in district implementation)

Table 8: Final output: Updated targeted population for JRSM

District	Number of sub-districts	Number of sub-districts to be treated	Targeted population for PC