

# NTDs TECHNICAL REPORT

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# I. Data Dictionary

Column	Header Name	Description
<b>A</b>	Country	Name of country according to WHO format.
<b>B</b>	WHO Region	WHO-classified region.
<b>C</b>	Population	Population size of country.
<b>D</b>	LF DALYs	WHO estimated DALYs (all ages)
<b>E</b>	SCHIST DALYs	WHO estimated DALYs (all ages)
<b>F</b>	Whipworm DALYs	WHO estimated DALYs (under 5 years)
<b>G</b>	Whipworm DALYs	WHO estimated DALYs (5-14 years)
<b>H</b>	Whipworm DALYs	WHO estimated DALYs (all ages)
<b>I</b>	Hookworm DALYs	WHO estimated DALYs (under 5 years)
<b>J</b>	Hookworm DALYs	WHO estimated DALYs (5-14 years)
<b>K</b>	Hookworm DALYs	WHO estimated DALYs (all ages)
<b>L</b>	Roundworm DALYs	WHO estimated DALYs (under 5 years)
<b>M</b>	Roundworm DALYs	WHO estimated DALYs (5-14 years)
<b>N</b>	Roundworm DALYs	WHO estimated DALYs (all ages)
<b>O</b>	Blank	N/A
<b>P</b>	LF Prevalence	Sourced from WHO PCT databank
<b>Q</b>	LF # Treated	Sourced from WHO PCT databank
<b>R</b>	LF treatment coverage	Sourced from WHO PCT databank
<b>S</b>	Estimated LF treatment coverage	Regional and global averages are applied if no country level data is available
<b>T</b>	SCHIST treatment coverage	Sourced from WHO PCT databank
<b>U</b>	Estimated SCHIST treatment coverage	Regional and global averages are applied if no country level data is available
<b>V</b>	STH Pre-SAC Treatment Coverage	Sourced from WHO PCT databank
<b>W</b>	Estimated STH Pre-SAC Treatment Coverage	Regional and global averages are applied if no country level data is available
<b>X</b>	STH Pre-SAC Treatment Coverage	Sourced from WHO PCT databank
<b>Y</b>	Estimated STH SAC Treatment Coverage	Regional and global averages are applied if no country level data is available
<b>Z</b>	Blank	N/A

<b>AA</b>	<b>Blank</b>	<b>N/A</b>
<b>AB</b>	Blank	N/A
<b>AC</b>	Blank	N/A
<b>AD</b>	LF prevalence	Hand inputted data from the GBD results tool
<b>AE</b>	SCHIST all ages prevalence	Hand inputted data from the GBD results tool
<b>AF</b>	SCHIST 5-14 years prevalence	Hand inputted data from the GBD results tool
<b>AG</b>	Whipworm 1-4 years prevalence	Hand inputted data from the GBD results tool
<b>AH</b>	Whipworm 5-14 years prevalence	Hand inputted data from the GBD results tool
<b>AI</b>	Hookworm 1-4 years prevalence	Hand inputted data from the GBD results tool
<b>AJ</b>	Hookworm 5-14 years prevalence	Hand inputted data from the GBD results tool
<b>AK</b>	Roundworm 1-4 years prevalence	Hand inputted data from the GBD results tool
<b>AL</b>	Roundworm 5-14 years prevalence	Hand inputted data from the GBD results tool
<b>AM</b>	Blank	N/A
<b>AN</b>	DEC Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>AO</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>AP</b>	DEC+ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>AQ</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>AR</b>	ALB+IVM Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>AS</b>	Estimated Efficacy	Regional and global averages are applied if no country level data is available
<b>AT</b>	PZQ Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>AU</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>AV</b>	ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team

<b>AW</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>AX</b>	MBD Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>AY</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>AZ</b>	IVM+ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BA</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BB</b>	ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BC</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BD</b>	MBD Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BE</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BF</b>	IVM+ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BG</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BH</b>	ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BI</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BJ</b>	MBD Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BK</b>	Estimated efficacy	Regional and global averages are applied if no country level data is available
<b>BL</b>	IVM+ALB Efficacy	Hand inputted data sourced from numerous studies found by the systematic review team
<b>BM</b>	Blank	N/A
<b>BN</b>	LF endemicity	Country level endemicity sourced from the WHO PCT databank
<b>BO</b>	ONCH endemicity	Country level endemicity sourced from the WHO PCT databank

BP	SCHIST endemicity	Country level endemicity sourced from the WHO PCT databank
BQ	STH endemicity	Country level endemicity sourced from the WHO PCT databank
BR	Coding	Coded endemicity
BS	MDA Type	Determined by the NTD guidelines
BT	Treatment Part 1	Determined by the NTD guidelines
BU	Treatment Part 2	Determined by the NTD guidelines
BV	Disease targeted	Determined by the NTD guidelines
Range BW:CG	Impact scores	General impact formula is applied. ONCH impact score is divided by 30 because treatment is required twice a year for the lifespan of the adult worm (15 years)

### iii. Scoring Calculations

This is the current scoring mechanism, where  $D$  = DALYs,  $\theta$  = treatment coverage,  $e$  = efficacy, and  $p$  = prevalence:

$$\text{Impact} = \frac{D \cdot \theta \cdot e}{(1 - \theta \cdot e)} * p$$

1. For each country, DALY values are sourced from the IHME.

2. Efficacy for first-line drugs are calculated based on data from numerous studies: we use country-specific drug-specific data if available, otherwise we use regional drug-specific data averaged across all countries. Otherwise, we use global averages.

3. Treatment coverage is calculated by dividing prevalence from number treated, both sourced from the WHO PCT databank. If country-specific treatment coverage from the WHO is available, then this is used. If not, then the regional average of the treatment coverage based on available data is used. If no regional data is available, then the global average of available data is used.

4. Prevalence data is sourced from the GBD results tool. This data is also used to determine STH's country-level endemicity. If the average of all STH diseases is greater than 50%, endemicity is labeled as 2. If the average of all STH diseases is greater than 20%, endemicity is labeled as 1. Anything lower is labeled as 0.

5. If more than one drug is used in a regimen (e.g. IVM+ALB), we give each drug equal credit in impact.

### III. An Example Scoring Calculation: Bayer Healthcare

The following shows the calculation of the final impact score for the company Bayer Healthcare. This company is credited with the patent for one NTD drug, Praziquantel (PZQ). The drug PZQ is only used to treat SCHIST cases.

#### Taking Angola as an example:

DALY	= <b>28,347.68</b>	(Cell E9)
Treatment coverage	= <b>25.20%</b>	(Cell U9)
Efficacy	= <b>64.44%</b>	(Cell AU9)
SCHIST Prevalence	= <b>11%</b>	(Cell AE9)
LF Endemicity	= <b>1</b>	(Cell BN9)
ONCH Endemicity	= <b>1</b>	(Cell BO9)
SCHIST Endemicity	= <b>1</b>	(Cell BP9)
STH Endemicity	= <b>0</b>	(Cell BQ9)
Treatment	= <b>IVM+ALB, PZQ</b>	(Range BT:BU)
Disease targeted	= <b>LF+ONCH+SCHIST</b>	(Cell BV9)

#### Impact for SCHIST in Angola:

$$=(28,347.68 * 25.20% * 64.44%)/(1 - 25.20% * 64.44%)*11\%$$

**= 604.54**

The process above is repeated for every country so that an impact score for every country is obtained. To get the total impact score for Bayer Healthcare, we sum the impact scores where the drug used for treatment is PZQ, which is the only drug that Bayer Healthcare manufactures.

## IV. Assumptions

Data	Column/Range	Value Assumed
Treatment Coverage	P:Y	If country-specific treatment coverage is not available, regional average of the treatment coverage based on available data is used. If no regional data is available, then the global average of available regional data is used.
Efficacy	AN:BK	If country-specific efficacy for the first-line drug is not available, we use the average efficacy for that drug in the respective region. If no regional data is available, then the global average of available regional data is used.
Impact	BW:CG	We split impact equally between drug regimens within a country if more than one is present, however splitting may not necessarily be equal.