# NTDS TECHNICAL REPORT

## Table of Contents

# I. Data Dictionary

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

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

| | | |
|---|---|---|
| **AW** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **AX** | MBD Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **AY** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **AZ** | IVM+ALB Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BA** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| BB | ALB Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BC** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **BD** | MBD Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BE** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **BF** | ALB Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BG** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **BH** | MBD Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BI** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **BJ** | IVM + ALB Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BK** | Estimated efficacy | Regional and global averages are applied if no country level data is available |
| **BL** | IVM+ALB Efficacy | Hand inputted data sourced from numerous studies found by the systematic review team |
| **BM** | Blank | N/A |
| **BN** | LF endemicity | Country level endemicity sourced from the WHO PCT databank |
| **iBO** | 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, = treatment coverage, e = efficacy, and p = prevalence:

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 rst-line drugs are calculated based on data from numerous studies: we use country-specic drug-specic data if available, otherwise we use regional drug-specic 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 coun- try-specic 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%, ende- micity 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 nal 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 | **= 28,347.68** | (Cell E9) |
| Treatment coverage | **= 25.20%** | (Cell U9) |
| Efficacy | **= 64.44%** | (Cell AU9) |
| SCHIST Prevalence | **= 11%** | (Cell AE9) |
| LF Endemicity | **= 1** | (Cell BN9) |
| ONCH Endemicity | **= 1** | (Cell BO9) |
| SCHIST Endemicity | **= 1** | (Cell BP9) |
| STH Endemicity | **= 0** | (Cell BQ9) |
| Treatment | **= IVM+ALB, PZQ** | (Range BT:BU) |
| Disease targeted | **= LF+ONCH+SCHIST** | (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 Heathcare, 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-specic 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-specic efficacy for the rst-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. |