

Schistosomiasis

Schistosomiasis is a parasitic disease caused by infection with *Schistosoma* trematodes. The disease affects poor rural communities but has spread to urban areas and to tourists visiting endemic areas.

Disease and epidemiology

- Schistosomiasis is a parasitic disease caused by infection with *Schistosoma* trematodes including *S. mansoni*, *S. japonicum*, *S. mekongi*, *S. guineensis* and related *S. intercalatum* and *S. haematobium*.
- There are two main types of the disease:
 - intestinal schistosomiasis, which results in abdominal pain, diarrhoea, blood in the stool, Katayama fever (mostly with *S. japonicum* only) and, in advanced stages, enlargement of the liver and spleen, fibrosis, portal hypertension and accumulation of fluid in the peritoneal cavity; and
 - urogenital schistosomiasis (*S. haematobium* only), which results in bloody urine, fibrosis of the bladder and damage to the ureter and kidneys; genital forms manifest as pain of the testicle and blood in the sperm in men, abdominal and pelvic pain in women, pain during intercourse, ectopic pregnancies and infertility; association with HIV transmission has been demonstrated in co-endemic areas.
- Human transmission occurs through contact with water (e.g. bathing, swimming, washing clothes) infested with larval forms (cercariae) that develop in freshwater snails, the intermediate host; inadequate sanitation increases risk of transmission.
- The disease affects poor rural communities but has spread to urban areas and to tourists visiting endemic areas.

Core strategic interventions

Preventive chemotherapy	<ul style="list-style-type: none"> Regular treatment through mass drug administration (MDA) with praziquantel of at-risk groups (school-aged children, preschool-aged children, communities in highly endemic areas, adults in occupations involving contact with infested water)
WASH	<ul style="list-style-type: none"> Access to safe water Improved sanitation and management of excreta across communities (including animal waste) Individual hygiene education (e.g. use of toilets, personal hygiene)
Vector control	<ul style="list-style-type: none"> Snail control with molluscicides, physical removal, and environmental modification
Veterinary public health	<ul style="list-style-type: none"> Keeping animals away from transmission sites (for zoonotic transmission) especially in areas endemic for <i>S. japonicum</i>
Case management	<ul style="list-style-type: none"> Treatment of animals with praziquantel Treatment with praziquantel on case-by-case basis and individualized disease management (e.g. surgery and self-care) where appropriate
Other	<ul style="list-style-type: none"> Behavioural change, self-care and environmental management interventions

Progress against WHO 2020 targets

Impact indicator	2020 target	Current status
Regional Elimination	2015 – multiple regions ¹	0
	2020 – multiple regions ²	
Percentage of school-aged children covered with preventive chemotherapy	75%	67%

Risks that require mitigation

Zoonotic reservoirs could continue transmission; reintroduction of the disease by migration raises the risk of recrudescence; the disease could resurge if regular treatment through MDA is stopped without sustainability interventions in place (e.g. WASH and surveillance)

WHO 2030 target, sub-targets and milestones

Indicator	2020 (provisional estimate)	2023	2025	2030
Number of countries validated for elimination as a public health problem (currently defined as <1% proportion of heavy intensity schistosomiasis infections)	0	49/78 (63%)	69/78 (88%)	78/78 (100%)
Number of countries where absence of infection in humans has been achieved	1/78 (1%)	10/78 (13%)	19/78 (24%)	25/78 (32%)

¹ Eastern Mediterranean Region, Caribbean, Indonesia and the Mekong River basin

² Region of the Americas, Western Pacific Region and selected countries in the African Region

SOURCE: All data sourced from WHO unless otherwise indicated

Burden of disease

About 236 million

people required MDA in 2019

About 24 000

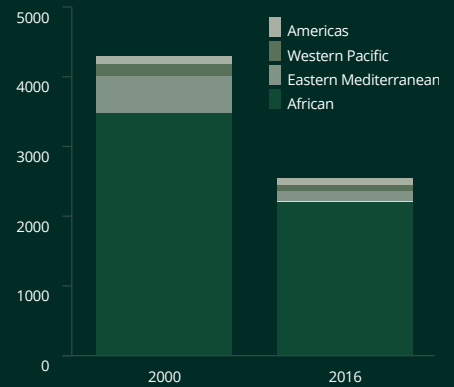
deaths in 2016

About 2.5 million

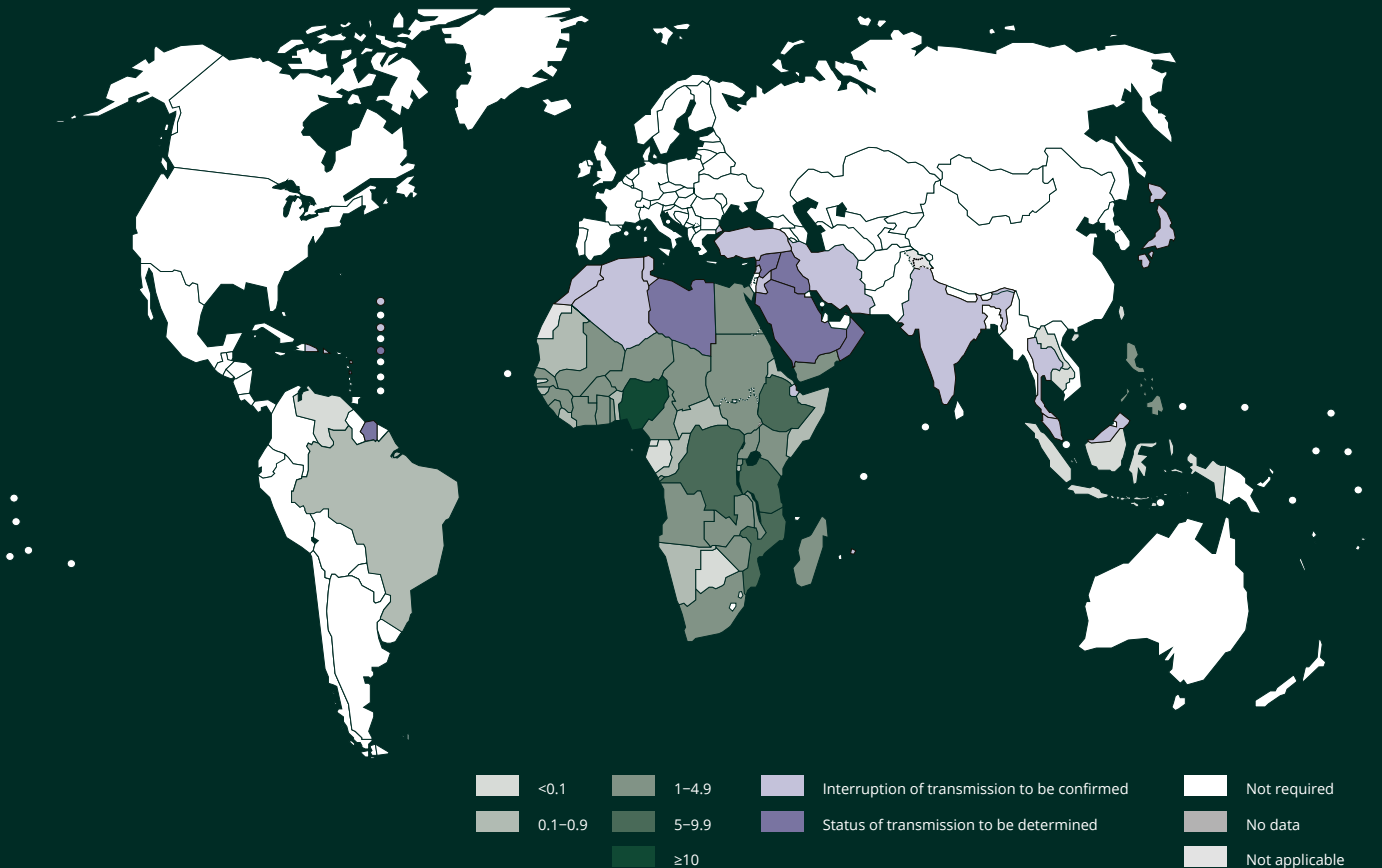
DALYs in 2016

As of January 2020, schistosomiasis is endemic in 78 countries, of which 51 countries have moderate to severe transmission and require preventive chemotherapy; more than 90% of people requiring treatment live in Africa. Deaths and DALYs are likely underestimated due to underreporting, method used to assess disability and other factors.

DALYs per region, thousands



Proportion (%) of global population requiring preventive chemotherapy, 2019



Schistosomiasis: assessment of actions required to meet 2030 sub-targets



Summary of critical actions to achieve targets

- Define indicator for measuring morbidity.
- Implement effective interventions, including extending preventive chemotherapy to all populations in need and ensuring access to the necessary medicines; implement targeted snail control with updated guidelines; continue micro-mapping and targeting.
- Develop diagnostic tests, including standardized point-of-care diagnostic, and develop new interventions, including alternatives to praziquantel and methods of snail control.
- Create effective cross-sectoral governance mechanisms to coordinate with WASH, vector control, animal health, environment and other key sectors.
- Ensure sufficient resources, including domestic financing, for access to interventions (including MDA for children and adults as well as snail control), development of new tools and strengthening of health care capacity.

Category and current assessment

Technical progress

Scientific understanding

Current status

- Decent understanding of transmission and parasite life cycle
- Unclear understanding of resurgence pathways
- Gaps in understanding of specific snails, hybrid species and zoonotic reservoirs; zoonotic reservoirs maintain transmission
- Insufficient understanding of spectrum of morbidities

Actions required

- Determine causes and strategies to prevent resurgence and to sustain elimination as a public health problem once achieved
- Understand zoonotic transmission and interventions to address zoonotic reservoirs
- Determine causes and develop strategies to address areas not responding to treatment
- Determine impact of female genital schistosomiasis and association with HIV
- Define both economic and health impact of clinical and “subtle” morbidity

Diagnostics

- Kato-Katz and urine filtration used to measure prevalence and intensity but suboptimal in low prevalence areas
- More sensitive and specific rapid diagnostic tests are being used and others are under development

- Develop and introduce standardized, sensitive, point-of-care diagnostics for different prevalence settings and all schistosome species; use for mapping and transmission assessment
- Create biorepository of sera, urine and stool for diagnostic development, validation and evaluation
- Develop test for resistance to praziquantel
- Develop molecular test for xenomonitoring and surveillance
- Develop point-of-care diagnostic for female genital schistosomiasis

Effective intervention

- Regular treatment with praziquantel, through MDA or test and treat, reduces infections and prevalence
- Research on improved formulations of praziquantel and paediatric formulation is ongoing
- Tailored snail control is being implemented in some countries; however, environmental concerns exist
- There is a need to strengthen the evidence of effective WASH and behavioural change interventions

- Utilize or implement current strategies according to guidelines (e.g. expand treatment to adults, implement WASH) and conduct operational research simultaneously to inform future interventions
- Introduce or improve micro-targeting of MDA and other interventions at community level
- Develop new, alternative medicines to complement praziquantel in case of resistance
- Develop and launch safer, cheaper and effective snail control technology considering the environment
- Conduct operational research to improve effective WASH and behaviour interventions for prevention
- Consider development of a vaccine for humans and animals to prevent reinfection and reduce transmission
- Improve morbidity management including coinfection and secondary infection
- Coordinate with WASH services and organizations effectively to ensure access to sufficient clean water for bathing and washing and provide health education



For more details, please visit:
www.who.int/schistosomiasis/en/

Target: elimination as a public health problem

Category and current assessment

Strategy and service delivery

Operational and normative guidance

Current status

- Process for verification of elimination of transmission under development
- WHO manual on indicators of morbidity published
- New guideline includes treatment of all at-risk groups

Actions required

- Create guidance on how to sustain elimination as a public health problem and elimination of transmission
- Develop methodological guidance for measuring progress and impact assessment
- Develop intervention and monitoring strategies for urban and periurban settings

Planning, governance and programme implementation

- Good coordination among stakeholders
- National programmes at different stages of development concerning multisectoral integration of snail control, WASH and behavioural change interventions

- Adopt and implement current strategies nationally (e.g. expand to other groups including adults, school-aged children (SAC) not at school); improve compliance of MDA and WASH by strengthening social mobilization and behavioural change
- Implement test, treat and track strategies in countries striving for elimination of transmission
- Develop a coherent cross-sectoral governance structure (e.g. WASH, vector, education, animal) within countries to deliver interventions effectively; include schistosomiasis in their packages of universal health coverage

Monitoring and evaluation

- Epidemiology of the disease currently not well understood
- Working group established to provide new guidance for M&E, granular mapping and impact assessment

- Improve data quality and mapping to support target and track progress at the lowest level; implement granular mapping (harnessing new technologies) to support targeted MDA and other interventions at lower administrative or community levels
- Collect M&E data from pre-SAC, SAC and adults to inform optimal treatment strategy
- Implement impact assessments for potential strategy adjustment
- Use endemicity data to target WASH investment and track progress to elimination
- Improve reporting on distribution, leveraging new tools
- Implement monitoring for efficacy of and drug resistance to praziquantel
- Develop economic impact indicators to assess disease burden and programmatic progress

Access and logistics

- Donation of 250 million tablets of praziquantel from Merck available for treatment of school-aged children and some adult treatment through community delivery in the African Region
- Some countries use alternative sources of praziquantel
- Reliance on school-based delivery of treatment can miss children not attending school, preschool-aged children (pre-SAC) and adults

- Utilize donor coordination, supply and logistic tools to ensure access to sufficient quality-assured praziquantel to treat all in need
- Ensure access to and delivery of treatment to all at-risk populations, including adults, according to the guidelines (e.g. through strengthening logistical aspects)
- Ensure access to paediatric formulation of praziquantel for pre-SAC once available
- Ensure access to molluscicides and zoonotic interventions as available
- Ensure access to diagnostics as available

Health care infrastructure and workforce

- Health care infrastructure and laboratory capacity variable, with certain regions lacking capacity
- Low availability of skills in malacology and snail control
- Lack of awareness of female genital schistosomiasis by health care providers

- Integrate schistosomiasis into primary health care
- Build laboratory capacity for surveillance
- Strengthen health care capacity for morbidity assessment and case management
- Build capacity in malacology and snail control

Enablers

Advocacy and funding

- Currently, treatment programmes rely heavily on external funding, which in many countries can be short-term

- Advocate to international and domestic stakeholders and policy-makers to strengthen ownership of schistosomiasis control and elimination programmes and their integration into universal health coverage
- Mobilize extra resources for progress towards the ultimate goal of elimination of transmission, which would allow MDA to be stopped; mobilize resources for medicines, molluscicides and other needs
- Develop a request of interest for WASH investments in areas endemic for schistosomiasis

Collaboration and multisectoral action

- Manual (2013) and Global strategy on WASH and NTDs (2015) published
- Advocacy document on female genital schistosomiasis and HIV published (2019)
- Level integration with other sectors (e.g. WASH, agriculture, education, vector control, environment)
- Coordination organizations include the Global Schistosomiasis Alliance and the Neglected Tropical Diseases NGO Network

- Coordinate cross-sectoral interventions to implement treatment, WASH and behavioural strategies in communities, schools and health facilities; ensure access to clean water
- Integrate schistosomiasis interventions with other NTDs for efficiencies (e.g. MDA/preventive chemotherapy)
- Strengthen collaboration with other actors in the health care sector for genital manifestations, coinfections and severe morbidity management
- Promote snail control as part of the Global Vector Control Response and coordinate with environment groups
- Coordinate with animal sectors and the One Health approach

Capacity and awareness building

- Female genital schistosomiasis atlas published to help in diagnostics (2015)
- Manual on morbidity management under development
- Manual on malacology, web training platform and App under development
- Manual on field use of molluscicides published (2017)

- Support training of health staff in laboratory diagnostics, clinical management of cases and genital manifestations, malacology and snail control; integrate trainings with other NTDs and sectors
- Develop epidemiological skills in workforce to enable assessment of treatment strategies and their tailoring
- Adopt strategy for long-term sustainability and greater national ownership
- Raise awareness among general public of the disease and its transmission, prevention and WASH and NTD interventions through production of manuals