

# Schistosomiasis Disease

## WHAT IS SCHISTOSOMIASIS DISEASE?

Also known as snail fever, schistosomiasis is caused by parasitic flatworms called schistosomes. It is spread through contact with contaminated fresh water. Most human cases are caused by specific species of flatworms, mainly *Schistosoma mansoni*, *S. haematobium* and *S. japonicum*. In tropical countries, it is second only to malaria among parasitic diseases with the greatest economic impact. Schistosomiasis affects almost 200 million individuals per year, with most cases occurring in Africa, Asia and South America.

## SYMPTOMS AND COMPLICATIONS

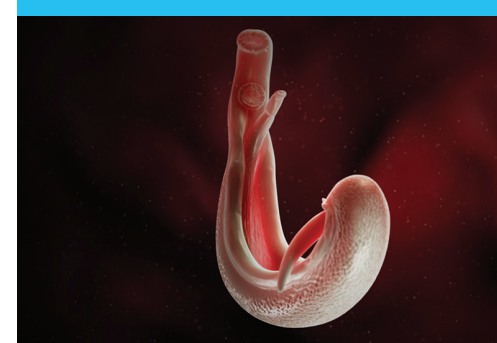
Symptoms of schistosomiasis include abdominal pain, diarrhea and bloody stool. A classic sign of urogenital schistosomiasis is blood found in urine. If the infection has been present for more than a year, individuals may experience liver damage, kidney failure, infertility and potentially bladder cancer.<sup>1</sup> Pediatric populations may experience learning difficulty and poor growth.

## TRANSMISSION

Schistosomiasis is transmitted through contact with parasite-infested fresh water, where the parasites are released by infected snails. The parasites then penetrate susceptible individuals upon contact with the skin. Parasites enter the host, mature and lay eggs. The eggs subsequently leave the host system through fecal matter or urine to further spread to additional freshwater snails—continuing the cycle.

## DIAGNOSIS AND TREATMENT

The most practical diagnosis of schistosomiasis is through microscopic detection of the presence of parasite eggs in the stool or urine of suspected individuals, especially in resource-limited settings. However, indications of infection also include antibodies and/or antigens detected in blood or urine samples using ELISA, circumoval precipitin tests and alkaline phosphatase immunoassays.<sup>2</sup> Estimates show that in 2018, 291 million people required treatment for schistosomiasis, of which 97 million were actually treated.<sup>3</sup> There are two drugs available for the treatment of schistosomiasis: praziquantel (first-line) and oxamniquine (second-line). However, combination of praziquantel with metrifonate, artesunate or mefloquine is also used. Regardless of symptom presentation, all suspected cases should be treated because the parasite can inhabit the host for years.



**~200 million**  
people affected per year

### Long-term Symptoms of Schistosomiasis

- Liver damage
- Kidney failure
- Infertility
- Bladder cancer

Data current as of March 24, 2020

## CURRENT SITUATION, EPIDEMIOLOGY AND WHAT'S NEXT

Schistosomiasis is commonly found in places with extremely poor sanitation. It is considered one of the most prevalent parasitic infections. Of the 200 million people globally affected per year, 20 million experience severe infection. In sub-Saharan Africa, it is estimated to result in more than 200,000 deaths per year.<sup>4</sup> Children are particularly susceptible to infection because of activities such as swimming or even bathing in infested water.

*S. mansoni* is endemic to Africa (sub-Saharan Africa, Great Lake regions and Nile River valley), South America (Brazil, Suriname and Venezuela) and the Caribbean (Dominican Republic, Guadeloupe, Martinique and St. Lucia). *S. haematobium* is endemic to Africa (Nile River valley in Sudan and Egypt, sub-Saharan Africa), the Middle East and Corsica. *S. japonicum* is endemic to Indonesia, China and Southeast Asia. Other species, including *S. mekongi* and *S. intercalatum*, also transmit the disease in Laos and Cambodia and in Central and West Africa, respectively.<sup>5</sup>

In 1996, schistosomiasis due to *S. japonicum* was declared eradicated in Japan, and transmission rates in China have plummeted since. However, the disease remains a major problem in other endemic areas in the Philippines and Indonesia.<sup>6</sup> On January 16, 2020, the Philippines Department of Health announced an initiative to interrupt and eliminate the transmission of schistosomiasis by 2025. Other countries in these endemic regions are following suit, as millions of people across Africa, for example, are receiving treatment for the disease. Great strides still need to be made in terms of drug development, patient access and government initiatives, but promising control measures appear on the near-term horizon.

According to [ClinicalTrials.gov](https://clinicaltrials.gov), there are currently ten ongoing clinical trials. Five are focused on treatment with the drug praziquantel.



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1 Meltzer, E. et al. Emerg Infect Dis. 2006 Nov; 12(11): 1696-1700.

2 Gray, D. et al. BMJ. 2011 May 17; 342:d2651.

3 "Schistosomiasis," March 2, 2020, World Health Organization Fact Sheets.

4 Bocanegra, C. et al. PLoS Negl Trop Dis. 2015 Oct; 9(10): e0004055.

5 "CDC - Schistosomiasis - Epidemiology & Risk Factors," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, June 22, 2018), <https://www.cdc.gov/parasites/schistosomiasis/epi.html>.

6 Olveda, R. & Gray, D. Trop Med Infect Dis. 2019 Apr 13; 4(2).

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