Schistosomiasis

Infectious Agent
Schistosomiasis is caused by helminth parasites of the genus *Schistosoma*.

Mode of Transmission
Waterborne transmission occurs via penetration of larval cercariae in contaminated bodies of fresh water.

Occurrence
An estimated 85% of the world's cases of schistosomiasis are in Africa, where prevalence rates can exceed 50% in local populations. *S. mansoni* and *S. haematobium* are distributed throughout Africa; only *S. haematobium* is found in areas of the Middle East, while *S. japonicum* is found in Indonesia and parts of China and Southeast Asia (Map 5-7). Two other species can infect humans: *S. mekongi*, found in Cambodia and Laos, and *S. intercalatum*, found in parts of Central and West Africa. These two species are rarely reported causes of infection.

Risk for Travelers
All ages are at risk for infection with travel to endemic areas and freshwater exposure. Swimming, bathing and wading into contaminated freshwater can result in infection. Human schistosomiasis cannot be acquired by contact with saltwater (oceans or seas). The distribution of schistosomiasis is very focal and determined by the presence of competent snail vectors, inadequate sanitation, and infected humans. The geographic distribution of cases of schistosomiasis acquired by travelers reflects travel and immigration patterns. Most travel-associated cases of schistosomiasis are acquired in sub-Saharan Africa. The specific snail vectors can be difficult to identify, and snail infection with human schistosome species must be determined in the laboratory. The types of travelers and expatriates potentially at increased risk for infection include adventure travelers, Peace Corps volunteers, missionaries, soldiers, and ecotourists. Outbreaks of schistosomiasis have occurred among adventure travelers on river trips in Africa.

Clinical Presentation
Incubation period is typically 14–84 days for acute schistosomiasis (Katayama syndrome), but chronic infection can remain asymptomatic for years. Penetration of cercariae can be associated with a rash that develops within hours or up to a week after contaminated water exposures. Acute schistosomiasis is characterized by fever, headache, myalgia, and respiratory symptoms. Eosinophilia is present, as well as often painful hepato- and/or splenomegaly. The clinical manifestations of chronic schistosomiasis are the result of host immune responses to schistosome eggs. Eggs secreted by adult worm pairs enter the circulation and lodge in organs and cause granulomatous reactions. Eosinophilia may be present. *S. mansoni* and *S. japonicum* eggs most commonly lodge in the blood vessels of the liver or intestine and can cause diarrhea, constipation, and blood in the stool. Chronic inflammation can lead to bowel wall ulceration, hyperplasia, and polyposis and, with heavy infections, to periportal liver fibrosis. *S. haematobium* eggs typically lodge in the urinary tract and can cause dysuria and hematuria. Calcifications in the bladder may appear late in the disease. *S. haematobium* infection has been associated with increased risk of bladder cancer. Rarely, central nervous system schistosomiasis may develop; this form is thought to result from aberrant migration of adult worms or eggs depositing in the spinal cord or brain. Signs and symptoms are related to the site of the granulomas in the central nervous system and can present as transverse myelitis.
Diagnosis
Microscopic identification of parasite eggs in stool (S. mansoni or S. japonicum) or urine (S. haematobium). Serologic tests are useful to diagnose light infections where egg shedding may not be consistent and in travelers and others who have not had schistosomiasis previously. Antibody tests do not distinguish between past and current infection. Available test sensitivity and specificity vary, depending on the antigen preparation used and how the test is performed.

Treatment
Schistosomiasis is uncommon in the United States, and the inexperienced physician is advised to consult an infectious disease or tropical medicine specialist for diagnosis and treatment. Physicians can consult with CDC to obtain information and access diagnostic services. Praziquantel is used for the treatment of schistosomiasis. Praziquantel is most effective against adult forms of the parasite and requires an immune response to the adult worm to be fully effective.

Preventive Measures for Travelers
No vaccine is available. No drugs for preventing infection are available. Preventive measures are primarily avoiding wading, swimming, or other contact with freshwater in disease-endemic countries. Untreated piped water coming directly from freshwater sources may contain cercariae, but filtering with fine-mesh filters, heating bathing water to 50° C (122° F) for 5 minutes, or allowing water to stand for at least 24 hours before exposure can eliminate risk of infection. Swimming in adequately chlorinated swimming pools is virtually always safe, even in disease-endemic countries. Vigorous towel-drying after accidental exposure to water has been suggested as a way to remove cercariae before they can penetrate, but this may only prevent some infections and should not be recommended as a preventive measure. Topical applications of the insect repellent DEET can block penetrating cercariae, but the effect depends on the repellent formulation and may be short lived and cannot reliably prevent infection.

Source: Centers for Disease Control (CDC), Atlanta, Georgia, U.S.A. World Trade Press is not in the health care business and accepts no liability for statements on this page.