Schistosomiasis can be prevented

Schistosomiasis is acquired by exposure to water containing infected snails. If safe drinking-water supply systems are supplemented with simple laundry and shower facilities the risk of contracting the disease is greatly diminished.

The main aim of the International Drinking Water Supply and Sanitation Decade is to prevent gastroenteritis among infants in developing countries. A project in Saint Lucia has shown that, as well as producing this result, improved water supplies lead to a reduction in the transmission of schistosomiasis \((1, 2)\). Furthermore, after the widespread use of antischistosomal drugs, no increase in the prevalence of infection was observed over four years in villages with a standpipe water supply, laundries and showers.

The Saint Lucia project

This project was designed to evaluate three methods of combating schistosomiasis — snail control, chemotherapy, and reducing the risk of infection by providing safe water.

Initially a comprehensive water delivery system, consisting of a water outlet to each house, communal laundries, shower facilities, and play pools for children, was used. Health education induced women to refrain from washing clothes in rivers, and, as a consequence, children accompanying their mothers were less exposed to infected river water; over a four-year study period the incidence of new \(Schistosoma mansoni\) infections among children aged 2–5 years fell from 19.3% to 4.5%. Over the same period in villages served by a standpipe system the incidence fell only very slightly, from 16.5% to 14%.

The comprehensive system, costing US$ 22 per capita at 1970 prices, is too expensive for developing countries. When the standpipe system in some of the comparison villages was made more reliable and supplemented by laundry and shower units, however, the observed frequency of exposure to infected river water was reduced by 50% within 12 months. Failure of the rains subsequently reduced water supplies and, as a result, contacts with infected water increased. When normal rainfall resumed, the system became operative again. Treatment was then offered to all people found to be infected and the value of the water supplies as a means of preventing a resurgence of transmission was assessed. Over a four-year period the incidence
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among children up to the age of 11 remained between 4% and 7%.

In the villages with the comprehensive water supply system, treatment was given and the incidence gradually fell to 1%. In one valley where chemotherapy and a comprehensive but less regular water supply system were provided, there was a fall in incidence but transmission appeared to reach a steady low level, again between 4% and 7%.

These results suggest that, after chemotherapy has been given, a water supply system including laundry and shower units keeps transmission at a low level.

Chemotherapy

Chemotherapy is now the main tool in schistosomiasis control programmes. It rapidly reduces the prevalence and intensity of infection but there is, inevitably, a reservoir of infection, and transmission continues at a low level. In the absence of other control measures an increase can be expected, the rate depending on the reservoir of infection and local ecological conditions. Further treatment will then be necessary to prevent the development of schistosomiasis. In Saint Lucia, community standpipes and household water supplies supplemented by laundry and shower units appeared to prevent this from happening for four years.

Siting

Water supplies should be conveniently located and, if possible, houses should be nearer to them than to infected surface water. The siting of a water outlet should be discussed with the women who will use it, and if a washing facility is to be built on land donated by a villager, it should be established that this will not deter any women, for whatever reason, from using it. Women should also be consulted on the height of washing tubs or slabs. In some cultures it may be preferred to have them at

Education

To obtain the greatest possible benefit from safe water, health education is necessary for all sections of the community, but it should be aimed particularly at children and women. The message that the proper use of water can contribute to the prevention of schistosomiasis and other diseases should be
waist height, in others there may be a preference for them to be nearer the ground. Concrete laundry tubs were used in Saint Lucia, but, if these are not available, washing slabs can be used. Tubs have the advantage that they are ideal for washing babies and young children.

Showers can be installed if there is a piped water supply. Where pump or well water is used, a simple screen can provide the privacy needed for personal washing. A floor with effective drainage is always necessary.

**Maintenance**

The maintenance of water supply systems is essential. When these are dependent on local surface water, as with the government supply in Saint Lucia, seasonal variation in supply may be inevitable, but mechanical breakdown should be attended to promptly. It has been postulated that an effective water supply would mean that people would not go to rivers for water and therefore that faecal and urinary contamination would be reduced (5). In Saint Lucia, however, there was evidence to the contrary — where the river was not the public water supply, its contamination increased. Thus, if a supply breaks down and maintenance of the system is poor, a return of the population to the river could lead to many cases of schistosomiasis (though this would be less likely after chemotherapy). Maintenance should include the repair of dripping taps, which not only waste thousands of gallons of water but can lead to the formation of pools that may become snail-infested. Infected snails were found in Saint Lucia under such circumstances, probably due to the washing of faeces-contaminated hands under taps. These pools can also serve as breeding sites for mosquitoes. It is vital, therefore, that the areas around pumps or pipes be adequately drained. Pump maintenance has been a major problem in the past, but serious efforts are now being made to test pumps thoroughly in both the laboratory and the field before they are put into service (6–9). In Kenya, pumps are produced locally and spare parts are plentiful; local personnel are trained in maintenance, which is the responsibility of the local health committees—a small charge is therefore made for the water.

**Prevention**

The prevention of schistosomiasis is now possible thanks to the new control strategy based primarily on chemotherapy. More ministries of health are embarking on preventive programmes. Because water development programmes are frequently under the control of different ministries, interministerial coordination in this area is clearly desirable.

**References**

8. Ibid, 1984 (report No. 3).