

AFRICA

Bilateral action

by Rolf Korte
and Bergis W. J. Schmidt-Ehry

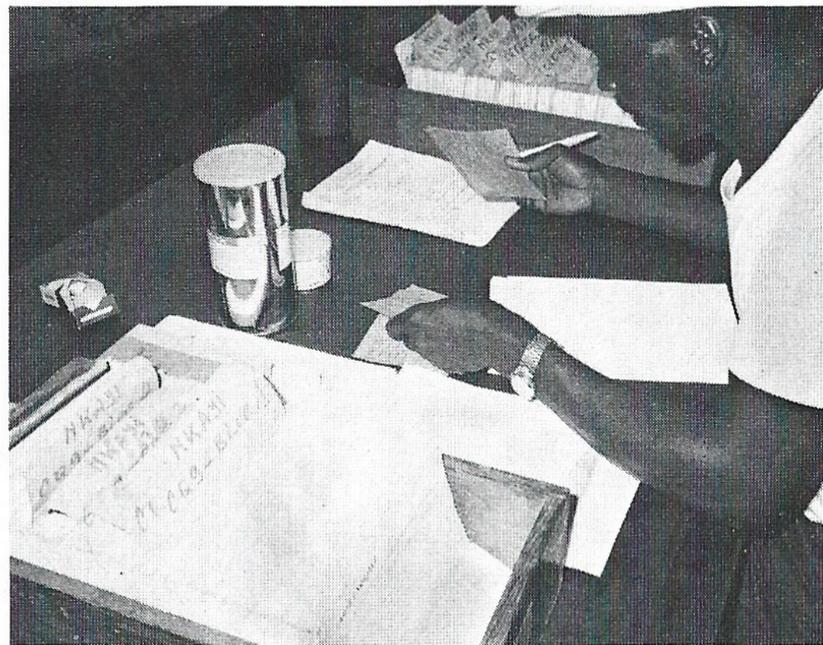
With a growing world population, the amount of water available for efficient agriculture has dwindled, leading to the development of extensive irrigation schemes throughout Africa and many other parts of the world. But in those parts of the tropics where the conditions are favourable for schistosomiasis, irrigation has simultaneously resulted in the spread of either *S. haematobium* or *S. mansoni* infections.

In the Federal Republic of Germany's programme of support to agricultural development, irrigation is considered an important component for increased production. This was the starting point which led to the German Agency for Technical Cooperation (GTZ)—responsible for German bilateral technical cooperation projects—to get involved in schistosomiasis control at the request of the authorities in Mali, the People's Republic of the Congo, Malawi and Madagascar.

When small dams were constructed in Dogonland, Mali, they were a first step to providing the population with some form of income through agricultural production, and a better nutritional status. But the more or less permanent presence of water throughout the year favoured the spread of schistosomiasis. Obviously, a special control programme was required.

Schistosomiasis is not new to Mali, as documented by the fact that in folk medicine the illness is described as

nyenkene bilenke (red urine). The people have no clear concept of the causal factors, yet one explanation for the disease is that a person steps into the urine of someone else who has already been infected. Others consider red urine to be related to sexual intercourse and believe it to be a venereal disease. This is also true of the popula-



Correct registration is essential for efficient treatment, epidemiological control and evaluation.

Photo WHO/R. Korte

tion in N'kayi area in the Congo. In the 1970s songs existed throughout the country about the maidens one could not marry because they were all diseased. This example shows that schistosomiasis can have a profound influence on the social life of a population, in addition to the physical effects of the disease itself.

From the start of the GTZ projects, the strategy was to attack the disease

from different angles and not to rely on one single method. When the control programme began in Mali and Congo, the new chemotherapeutic compound praziquantel, which provides a one-dose cure, was not yet available—we had instead to rely on drugs that were not so effective and required several treatments. The control of intermediate-host water snails was still of considerable importance, in spite of its limited effectiveness and the environmental hazards. The molluscicides applied killed all fish in the waters treated, which is particularly undesirable when fish contribute significantly to the food supply of the population.

Health education

The third component of the control strategy is health education, that is, trying to encourage the population not to use the water for defecation and to avoid contact with contaminated water whenever possible. The fourth component is the supply of alternative water resources, e.g. wells, away from the infected waters, and encouragement of the construction and use of latrines. Emphasis was placed on applying all four components simultaneously wherever possible, instead of relying on just one strategy which might lead to quick results without changing the attitude and behaviour of the population. It became a principle in Mali to offer mass treatment and molluscid-



Many of their specialised teams' tasks will probably be handed over to primary health care workers.

Photo WHO/U. Brinkmann

ing to the population only after the community has shown an active interest in well-construction.

With the advent of the one-dose treatment drug praziquantel, mollusciciding became less important. Moreover, in systematic investigations in Mali, it was very difficult to find a correlation between the presence of snails and the infection rates in the population. Also, running waters are difficult to treat—a particular problem in the Congo. Large quantities of molluscicides would have been needed, with unacceptable environmental side-effects. For these reasons, the three components of the new strategy are now chemotherapy for large population groups after urine and stool examination, health education, and environmental sanitation. Focal mollusciciding is applied in special cases only.

The involvement of the community in all these activities remains a vital factor. Without community involvement it is possible neither to motivate the population to participate in mass examination and treatment efforts, nor to improve sanitation and hygienic behaviour.

Since in most situations it is virtually impossible to eradicate schistoso-

miasis, the objective of control efforts is to reduce the prevalence and intensity of infection to a level which no longer constitutes a disease problem. With the strategy described, prevalence rates have been reduced to very low levels, particularly in the Congo. The average prevalence in the Niari area of Congo dropped from about 50 to 15 per cent between 1980 and 1983. Out of 102 villages, only three still had prevalences above 50 per cent, and only 27 were in the range between 10 and 49 per cent. Egg counts were reduced significantly in all age-groups, lowering the risk of complications.

In Mali, prevalence reduction has not yet been fully successful. Out of 20 villages with initial rates above 75 per cent, only five are still above this level. However, the number of villages with a prevalence less than 20 per cent increased only from 25 to 37, so 28 remain in the 20 to 74 per cent group (total number of villages: 70).

In mass-treatment campaigns in Malawi (see also pages 18-19), average prevalence dropped sharply one month after mass treatment with praziquantel, then rose again to about one-third after one year. In another area of Malawi, average prevalence had also dropped significantly a month after treatment, rising to about one-fifth of the original figure a year later.

It will be important to develop strategies that maintain the very successful prevalence reduction obtained

to date. For populations where the disease is often found in some 70 to 80 per cent of the total population, a vertical approach using specialised teams is justified. However, once the prevalence is reduced to low levels, specialised teams become cost-ineffective. At this point other strategies need to be developed and here a linkage should be sought with the primary health care system. The project staff are at present investigating to what extent tasks can be delegated to primary health workers. In urinary schistosomiasis, a syringe and a filter device are all that is needed to examine the urine for schistosome eggs. The filter can be sent by the primary health worker to a central examination point, and the results can be returned with recommendations for treatment. In intestinal schistosomiasis a stool examination is required, which makes diagnosis and subsequent treatment much more difficult, if not impossible. As, however, double infections are found in some areas, the question is whether concentrating efforts on *S. haematobium* (urinary schistosomiasis) alone would simultaneously reduce *S. mansoni* (intestinal infection) to a level which would no longer constitute a disease problem.

Personal computers

An essential step forward has been the development of computerised data analysis which offers an opportunity to evaluate and monitor control activities continuously. In Mali and the Congo, personal computers are used for data processing, local staff have been trained, and special programmes have been developed, appropriate to the epidemiological, statistical and operational needs of schistosomiasis control. All this improves the cost-efficiency of control strategies and activities.

Much more experience still needs to be gained in the effective control of schistosomiasis, especially as concerns a strategy for integrating control measures into the primary health care system. Yet the initial results are so promising that we can now expect—with a reasonable financial input—to bring schistosomiasis as a disease problem under an acceptable degree of control. ■