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Vector Biology
and Control Project

# Review of the

# Data Collection Activities of the

# Swaziland Schistosomiasis Program

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**by**

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# 1. Introduction

USAID/Mbabane requested that Vector Biology and Control Project (VBC) look at several issues related to the Swaziland Schistosomiasis Control Program and how it collects and uses data.

This subject has been addressed in some detail by Taylor (VBC Report AR-100, January - February 1989), and the MOH Schistosomiasis Workshop Report (October 1989) and the Schistosomiasis Control Strategy for Swaziland (August 1988). The research for this brief assessment consisted of these documents along with the Bilharzia Control Unit Annual Report 1989, the Bilharzia Control Unit, Ministry of Health Workplan, 1989-1991, and an interview with Mrs. Sibongile Mthupha, head of the BCU.

# 2. Review

Data on schistosomiasis in Swaziland are generated in several ways. At present they are poorly coordinated and of limited use for focusing national control operations.

## Screening and treatment program in schools

This screening and treatment program is run by school health teams, clinic nurses or school teachers who have received minimal instruction from the Bilharzia Control Unit (BCU) staff. In the program, urine specimens from schoolchildren in the more endemic areas of the low and middle velds are screened for blood. Looking at the specimens for visible (gross) blood identifies children with probable *Schistosoma haematobium* infections. These children are subsequently treated with metrifonate (Bilarcil) or praziquantel. The sensitivity of the screening process is supposed to be improved by using reagent strips (hemastix) that can detect traces of blood that cannot be seen. However, hemastix have not been available since the beginning of 1989, so only data from gross hemeturia cases are generated.

The BCU has developed a form to record the results of the examination and subsequent treatment ("Classroom Screening and Treatment for Urinary Bilharzia"). Completed forms would help the BCU identify schools with high positivity rates for follow-up and control stratification. Unfortunately, many forms are not returned, depriving the program of useful information on geographical distribution and age-specific prevalence.

Admittedly, the data from the screening program give no information about intensity of infection or about *Schistosoma mansoni* prevalence. The data are inexpensively collected, however, and, if faithfully reported from all schools in the endemic areas, would provide a profile of epidemiological prevalence of *S. haematobium* for the national program.

Several factors impede the screening program's success:

- The absence of hemastix greatly reduces the sensitivity of monitoring.
- Expectation that each identified case will be treated links data collection to the availability of drugs and sharply limits the possibility of wider application.
- Incomplete and unreturned forms deprive the BCU of valuable information.

## Suggestions

- The BCU could increase its knowledge of *S. haematobium* distribution by location and age by training more school health teams, clinic nurses and teachers throughout the endemic areas to do the screening and return completed forms.
- Data collection and screening could be uncoupled from treatment. Infected children should be referred to clinics. The BCU should stop treating in the classroom.
- The precious hemastix resource could be preserved by limiting tests to specimens that are negative for gross blood.
- The BCU could use its existing computer to develop a simple database for accumulating and analyzing screening data for stratifying its efforts in collecting quantitative urine and stool information.

## BCU school screening and treatment program

The BCU conducts a comprehensive program of school screening that is quantitative and yields information on both *S. haematobium* and *S. mansoni*. In 1989, only 22 schools were screened due to limited staff and finance. The quality and value of this data collection effort are the highest in the nation and must be directed with care and precision because it is also the most costly. The BCU has only two microscopists. Although they are well trained in the quantitative assessment of eggs in stool by the Kato Katz technique and the Nucleopore and Nitryl-filtration techniques for eggs in urine, there are limits to their output. A well-trained microscopist can perform approximately 60 tests of either type in a working day. Assuming that each child provides one stool and one urine specimen and the microscopist does nothing else, a team of two could provide quantitative data on no more than 6,000 children in a 260-day working year. This represents nearly 1 percent of the national population and a much higher proportion of the target group (children 10-18 years in the endemic regions); it is a significant capability.

The BCU's annual report for 1989 contains only one table presenting the results of more than 10,000 quantitative examinations on 5,164 school-children in 22 schools. It is a summary sheet of raw data that does not contain column totals or use other information collected such as age, sex, residence or time of year. Furthermore, it contains no analysis or recommendations.

### Suggestions

- The BCU school survey data could be made more valuable if the information were entered into a database using the unit's IBM-compatible computer. This would permit the BCU to generate monthly summary reports to be shared with the MOH. Computerization also would permit significant analyses such as age- and location-specific rates of infection.

- More data could be collected on individual children's forms. The forms could include such information as infection history (reinfection), previous residence (migration), knowledge of schistosomiasis life cycle (exposure to health education), and places of water contact (exposure to infection).

- The BCU collects information on an average of 240 children in 22 schools. If the BCU were more selective in choosing children for the sample (say children between age 11 and 14), fewer students (perhaps 100) could yield essentially the same information. As a result, some 50 schools could be sampled with the same effort and yield more geographically relevant data.

- The collated data would be more useful if an experienced epidemiologist examined it. Without this analysis, very little targeting of control efforts (chemotherapy, health education or focal molluscicide) can be expected.

## Special studies of agricultural or irrigation schemes

In 1989, the BCU conducted a quantitative survey of 211 employees of the Ngonini Irrigation Scheme. This study was the only one that yielded any quantitative information about infection in adults other than adults who came for treatment at the BCU clinic in Manzini.

This survey produced information on positivity for *S. haematobium* and *S. mansoni*, but the information was used primarily to target treatment. Studies of this type should have greater significance to the overall schistosomiasis control effort, and should be encouraged.

### Suggestions

- The BCU could conduct two or three such surveys per year to great advantage.

- The data collected in surveys of this type should include age, original place of residence, job category (such as laborer, engineer, manager) and water contact information.

- Follow-up should include site-specific studies of snail densities and snail infection rates in order to do focal molluscicide and environmental modifications to reduce snail breeding sites.

- A computerized database on these data sets could be used as baseline information for follow-up studies.

## Hospital and health clinic reports

The MOH reporting forms that hospitals and clinics file have a space for reporting bilharzia. Because most of the facilities cannot quantitatively analyze stool and urine, the data are presumptive at best.

If either the MOH or the BCU staff analyzed the tally sheets, however, they would provide age- and season-specific information by location. Such information could be used to focus more quantitative studies through the school health survey program or to identify areas for special studies.

### Suggestion

- The MOH should summarize the schistosomiasis-related information on the hospital and clinic report forms and give it to the BCU to include in its database.

## The walk-in clinic at the BCU in Manzini

The BCU offers a walk-in clinic service for anyone who suspects he or she has schistosomiasis. The clinic's services include free quantitative stool and urine analysis and treatment. In 1989, more than 2,000 people from all over the country visited the clinic.

Information on where the patient lives is collected and recorded along with the results of microscopic analysis and treatments. There was no evidence that these records are analyzed or collated to obtain geographical distribution or age-specific data. In fact, locations are by address and would need to be related to the MOH's administrative subdivisions.

Since the clinic patients essentially select themselves, there is no assurance that the samples on record have any relevance or geographical representation. They are probably of little value to the BCU's research program.

What is clear is that the clinic requires the limited staff to do at least 2,000 analyses that must be subtracted from the team's total output.

### Suggestions

- Valuable staff time could be better used to generate strong research data if the clinic were discontinued. Patients could be referred to clinics and health services.

- If the clinic cannot be abandoned, the data should be entered into a database that can be analyzed and used for selecting sentinel areas for prospective studies in the field.

- In any case, the BCU would be well advised to get out of the treatment business. It should refer diagnosed cases to medical facilities.

## 3. Summary

Data-collection efforts on schistosomiasis in Swaziland are almost entirely devoted to collecting epidemiological information. This emphasis may be appropriate because the national strategy's objectives are to reduce prevalence and intensity of infection in children and farmers.

The unquantified information from hospital and clinic reports coupled with that school health teams generate should yield enough data to profile age- and season-specific infection rates by location for the entire country. To do this, the school health program needs to be expanded and reports filed on a regular basis. In addition, the schistosomiasis information from hospital and clinic reports should be dissaggregated and supplied to a central unit.

The BCU has had a computer since 1989 that could formulate the suggested profile from those data. At present, no one at BCU knows how to use the computer, and it is doubtful that the present staff could take on the job even if training were provided.

The only quantitative data in the form of egg counts from stool and urine specimens are generated by the BCU through its school health surveys, walk-in clinic patients and special surveys of workers on the agricultural and irrigation schemes. While these are the most valuable data, the present staff members probably cannot perform more tests than they currently do.

Linking data collection with drug distribution and treatment is a questionable practice on the basis of safety. Furthermore, it is a considerable drain on BCU staff time.

BCU forms are simple and easy to complete. Expanding some of the information fields on the forms could be very useful.

Probably the system's most serious shortcomings are that the data being collected do not represent the country as a whole and that essentially no effort is being made to analyze, interpret and use the information for making decisions.

## 4. Recommendations

1. The MOH should identify an experienced epidemiologist to help the BCU organize, analyze and interpret data.

2. All information related to schistosomiasis should be provided each month to a central unit (presumably the BCU) and entered into computerized database.

3. The MOH should provide a computer technician from available staff to the BCU to enter data into the system and generate reports. This technician also could serve the needs of the Malaria Control Division.

4. USAID/Mbabane should request from the VBC Project the services of a "hands on" epidemiologist/data management specialist to help the BCU (and the Malaria Division) set up the required databases and training; the computer specialist should train staff in their use.

5. The BCU should pass drug distribution and treatment duties to the general health services. It should give more time to collecting and analyzing data.

6. The BCU should train more school health teams. This would maximize coverage of billiarzia screening throughout the endemic areas.

7. The BCU walk-in clinic should be examined for its usefulness in generating quantitative data. Preferably it should be discontinued. But if it is essential to the MOH control program, the data collected should be used better.

8. The BCU's special surveys of agricultural and irrigation schemes should be encouraged. The data sets being collected also should be expanded in the areas previously noted.