EXPERT ADVISORY COMMITTEE
Twenty-third Session
Ouagadougou, 23 – 27 September 2002

POST-OCP ONCHOCERCIASIS CONTROL
IN SIERRA LEONE
1. **Background information**

Sierra Leone is drained by a network of several large rivers with numerous breeding sites for the Blackfly - the vector of onchocerciasis. It is one of the most affected countries of the Onchocerciasis Control Programme in West Africa (OCP).

Administratively, the country is divided in four: the Western Area, North, South and Eastern provinces. With a total number of 13 districts. The districts are subdivided into chiefdoms and chiefdoms into villages. The Health care delivery system in the country is organised primarily around institutions and facilities. A medical officer is in charge of the District Health Team (DHT). The country has 550 peripheral health units. Community Health Centres are situated at the Chiefdoms headquarters and cater for most of the people in the Chiefdoms. The Community Health Post is situated within a Chiefdom and serves several villages.

The National Onchocerciasis Control Programme (NOCP) started as a vertical programme in 1989. The main control activities were larviciding and ivermectin distribution by mobile teams.

Onchocerciasis was being controlled in Sierra Leone by aerial larviciding and ivermectin distribution since 1990. Larviciding was interrupted in 1992/1993 in the south of Sierra Leone because it was subsequently discovered that transmission in that area involved non-migratory forest-type blackfly species (S. leonense) and could be controlled with ivermectin alone. The north of Sierra Leone continued to undergo larviciding until April 1994 (1990-1994), representing five years of vector control on the Rokel, the Mongo, the Kaba, the Kolente and Bagbe (tributary of Sewa) rivers. Attempts to resume larviciding in 1997 only lasted for five weeks (week 10 to 14) due to insecurity in the area.

After four to five years of combined vector control and ivermectin distribution in the Northern Sierra Leone, 1990-1994, the results were very good. Savannah fly populations were reduced (about 98% reduction compared to pre-treatment) and their role in transmission was insignificant, less than 1%. However, the epidemiological evaluation conducted in 1996 showed little or no improvement in the prevalence and the CMFL (67% prevalence and 15.8 mf/s at Kukuna on the Rokel basin).

A few years (three then eight years) after the interruption of larviciding, a slight increase in savannah fly populations was observed in the Northern Sierra Leone but their role in the transmission remains insignificant, less than 1%. With the displacement of human populations (including oncho patients) from the North due to the insecurity, it was observed from recent samples that the transmission is still low even with the slight increase in the biting rates of savannah flies.

2. **The problem**

Onchocerciasis is endemic in Sierra Leone and constitutes a serious public health problem and an obstacle to socio-economic development.

The third report of the WHO Expert Committee on onchocerciasis indicated that onchocerciasis occurs in Northern Sierra Leone and that the infections is found over most of the rest of the country apart from the coastal plains. The report estimates that the population at risk is about one million with 300,000 infected and 10,000 blind as a result of onchocerciasis. Ocular onchocerciasis constitutes a serious public health problem in both Northern and Southern Sierra Leone.
Parasitological surveys conducted by OCP in 1989/90 showed that out of 271 villages along the major rivers in the country, 134 (48%) were found to be hyper-endemic with prevalence of 60% and over, 105 (38.7%) were meso-endemic with prevalence rates of between 40% and less than 60% and the remaining villages were hypo-endemic.

Extensive epidemiological surveys carried out in 1996 in the northern part of the country where there were only three annual cycles of ivermectin distribution showed a little decrease in the prevalence of infection in most of the indicator villages. The prevalence ranged between 22%-67.4% and no control measures had gone on since 1994 due to insecurity. Most of the people have moved from the north to Freetown or to other secured areas.

With peace coming back to Sierra Leone, it is likely that oncho patients will go back to their home villages and therefore contribute to the transmission.

*S. sirbanum* movements from Sierra Leone to Guinea and Mali at the beginning of the rainy season and from these countries to Sierra Leone with the Harmattan winds at the beginning of the dry season are well documented. Even if the infectivity rate of savannah flies is nil, there is no evidence that the flies coming from the northern Sierra Leone at the beginning of the rainy season (with monsoon winds) are not contributing to the transmission in Guinea. In fact, the increase of transmission at Yalawa on the Mafou river started at the same time as the interruption of larviciding in the northern Sierra Leone in 1994. Besides, the decrease coincides also quite well with the massive displacement of populations from the north as from 1998.

On the other side, the reservoir of the parasite in the Mafou-upper Niger river basin has not been completely eliminated. Therefore, even if the flies are not infected in Sierra Leone, they might become infected when they migrate to Guinea through Monsoon winds and contribute to the transmission locally as well as in the oncho-freed zones. There is yet no evidence of this fact but the risk exists. With peace coming back to Sierra Leone and with all the efforts made to control onchocerciasis in West Africa, it will be unacceptable to leave this area without control measures supported by entomo-epidemiological evaluations. Taking into account the entomo-epidemiological situation in the upper Niger and Mafou basin in Guinea, strengthening ivermectin distribution in Guinea and installing reinforced ivermectin distribution system in Sierra Leone should be considered as a matter of urgency.

### 3. Aim and objectives

#### 3.1 Aim:

To eliminate onchocerciasis as a disease of public health and socioeconomic importance.

#### 3.2 General objective:

a. To establish a sustainable community directed treatment with ivermectin in the oncho endemic areas of Sierra Leone.

b. To integrate onchocerciasis control in the existing national health care system.

#### 3.3 Specific objectives:

a. To train health workers on, community directed treatment with ivermectin (CDTI), entomological surveillance and eventually nuisance control.
4. **Strategies**

- Training of health workers
- Training of community distributors and vector collectors
- IEC for the awareness raising, sensitization of population, the ownership of the CDTI by the communities and their commitment in the implementation of the control activities to be carried out.
- The distribution of the Ivermectin and catching of flies by the communities with the support and the monitoring/supervision by the health workers.
- Operational research (KAP, socio-demographic) to detect factors, which can compromise the CDTI, and to improve the distribution.
- Epidemiological/entomological evaluation to assess the impact of the distribution of Ivermectin.

5. **Summary observations and suggestions**

Putting CDTI in place should be a priority for any control programme in Sierra Leone as recommended by the 19th session of the EAC. Nevertheless, in the particular case of Sierra Leone which could be a threat to the oncho freed zones in Guinea and Mali, re-establishing an entomological evaluation network for some years to follow very closely the trend in the transmission should be considered.
More importantly, enough means should be available to support a strengthened ivermectin distribution all over the country. It must be noted that the Ministry of health is working towards an overall strengthening of entomological activities, with Makeni, the former main base of OCP in the country, as a vector borne disease surveillance centre.

6. **Description of the management**

The project will be a country project. It will be under the umbrella of the Ministry of Health, Sierra Leone, and executed through the national health system. However, given the particular situation of the country as described above (see the problem), it will be necessary to make sure that the work is done with an inter-country vision. Technical assistance at international level and financial and logistic support from the NGOs will help the Ministry to cope with this vision.

6.1 **Within the Ministry of health**

The national onchocerciasis control co-ordination will conduct the activities needed to meet with the objectives listed above. As CDTI and entomological surveillance will be the major activities, it is suggested that the co-ordination be ensured by one senior epidemiologist/public health specialist who will be the national co-ordinator. He will be based within the “Multidisease Surveillance and Control” division in the Ministry of Health and Sanitation in Freetown. For the field epidemiological work, the co-ordinator should be assisted by one laboratory research assistant and two laboratory technicians based in Freetown. As far as entomological work is concerned, the co-ordinator will be assisted by at least two entomologists, one of whom should be based in Makeni, at the centre of the country, and the other one will be stationed at Bo. The entomologists will be working with six entomological technicians, two based in each of the three bases (Makeni, Kabala and Bo). All these members of the co-ordination should be government employees working on the project. It will be necessary also to select and train villages at each evaluation site for fly catches.

6.2 **At inter-country level**

As mentioned above, it will be necessary to follow the situation very closely in term of transmission in Sierra Leone as well as in the upper Niger-Mafou in Guinea (one of the special intervention zones of OCP) at the border with Sierra Leone. To facilitate this cross-border issue but also to benefit from the experience of WHO in onchocerciasis control in the area, it is suggested that a link be established between the project and WHO/APOC through a special agreement. On the basis of this agreement, the Chief of Drug Distribution and Training (CDDT) of the Special Intervention Team and the Deputy Team Leader (DTL) will contribute to the organisation, management and supervision of the activities.

7. **Budget**

The budget required for a harmonious implementation of this project over five years is US$ 4,662,931.

7.1. **Personnel**

National staff will be performing basically the project. Nevertheless, international staff are supposed to work only part time for the project under the umbrella of WHO/APOC.
7.2. Travel

The proposed reinforced CDTI will entail intensive supervision and monitoring in the country as well as regular and periodic oversight by the team responsible for ivermectin delivery. This will demand frequent and extensive travel by the staff.

To follow very closely the trend in the transmission and be able to advise regularly those in charge of ivermectin distribution on the effectiveness of the work being done, entomological surveillance will be established. Provision is also being made for participation of the senior entomologist and the head of ivermectin distribution team in discussions away from their base stations as well as missions of supervision of field activities. This item takes also into account the organisation of meetings between the people responsible of this activity in the country and those from the bordering countries, specially from Guinea.

7.3. IEC/IEC material

Since the control activities were stopped for a long period, mobilization and sensitization of the population will be crucial strategies for the success of the activities. National IEC services, community approach and communication specialists (sociologists, media people, social workers), political, administrative, religious, traditional authorities, local NGDOs, all other human resources available and being able to convey the messages in a suitable way will be called upon to participate in the implementation. All existing communication channels will be used to reach the greatest number of the targeted population.

The sensitization of the population aims at achieving greater acceptance and ownership of CDTI and other control activities. The messages to be delivered to the population will need to be supported by appropriate IEC materials whose conception should involve the communication specialists.

7.4. Operational research

Studies will be conducted to assess the success of the activities or to improve the control process with the aim to obtain better results. These studies will focus on highlighting factors, which might have both positive and negative impact on the results of the control activities. Before the beginning of the activities it will be essential to undertake KAP studies in the endemic zones to possibly detect any determining factors to be taken in account in the control activities. In some areas, socio-demographic and other specific studies should be carried out periodically. On the entomological side, research activities will be limited to investigations aimed at better understanding of the situation in the area. These will mainly deal with continuing identification of the parasites through the use of DNA probes initiated by OCP. This activity will require the provision of resources for the supply of the required products and the collaboration of the Molecular Biology Laboratory within the AFRO Multidisease Surveillance Centre.

7.5. Entomo-epidemiological evaluation/surveillance

In order to assess the impact of the activities that will be undertaken, epidemiological evaluations will be carried out every three years in the indicator villages. The skin snip biopsy method and DEC patch test will be used for these epidemiological evaluations. OCP will provide the country with an epidemiological kit before its closure. Entomological surveillance will also be conducted to: (i) study the impact of ivermectin on transmission, (ii) follow very closely the trend in the transmission and (iii) be able to advise eventually those in charge of ivermectin distribution on the effectiveness of the work being done. It is suggested that each point be visited every two years.
7.6. **Monitoring and supervision**

Monitoring and supervision will be key activities to ensure the quality and regularity of the ivermectin distribution in the form. The health centre staff of the districts will be primarily in charge of these activities. Appropriate logistical means must be made available for the health centres and the district medical officers to ensure the regularity of these monitoring and supervision activities. On the other hand, supervision being vital for good and reliable entomological data, the entomologists will check from time to time the work done by the technicians and the capturers in the field. Health personnel at peripheral level will also be involved in this activity.

7.7. **Training/retraining**

For an appropriate implementation of the onchocerciasis control activities in the country there is a need for training/retraining of the persons involved in the activities. The health staff trained before the cessation of the activities as far back as ten years ago will be retrained. Training sessions will be organized for the health workers newly involved in the implementation of the activities. They will include not only the health staff but also the CDDs, the other players intervening in the field, i.e. teachers, social workers, agricultural supervisors and extension workers, etc. The training will cover epidemiological, entomological, CDTI, IEC, computer skills and data management activities. Some of the training/retraining has already been done or is underway.

7.8. **Operation expenditures**

Basic overhead costs which relate to the operation of the vehicles as well as other operational expenditures (telephone/fax, etc.) cannot be quantified with precision. As the structure to be set up in Freetown, Makeni, Kabala and Bo will be installed within the national health services structures (building), the expenditures for water and electricity (where applicable) will be mainly borne by these services.

7.9. **Supplies**

Any supplies and light equipment necessary for the activities which will become available at the end of the Programme could be put at the disposal of the project. However, this decision will have to be made by OCP as of now so that the appropriate steps for their transfer are taken. Nevertheless, it is judicious to provide an amount for the purchase of office stationery and office cleaning materials as well as for the first provisions of certain materials from the second year of operation.

7.10. **Fixed assets**

The fixed assets suggested are those which will make it possible to improve or optimise the working conditions of the teams, and thus to maintain their performance.

7.11. **Buildings**

Fitting up/adaptation of the administrative buildings which will house the bases so as to optimise their functionality. It should be noted that apart from the office in Freetown, most of the offices have been destroyed during the civil unrest and therefore need serious rehabilitation.

7.12. **Office equipment**

It is recommended that the project receive a certain number of furniture and equipment (tables, chairs, desks, cupboards, metal filing cabinets, etc.) from OCP. The requirement will be expressed in reasonable time to be taken into account in the disposal of the OCP property now being planned.
7.13. **Computer equipment**

The requirements expressed are considered as the minimum needed for a smooth running of the project. It takes into account what is already available. Nevertheless, it is recommended that an amount of US$ 35 000 be utilised for getting all the bases well equipped at the beginning of the project. Indeed, it could be necessary to replace material which would break down (printer or computer), or current technological development could make it necessary, before the end of the five years, to acquire more powerful computer equipment. US$ 10 000 will therefore also be put aside to guard against unforeseen difficulties the third year and US$ 16 430 at the end of the five year period.

7.14. **Vehicles and generators**

Taking into account the difficult nature of the terrain, new 4WD Toyota type for field work will be needed at the beginning of the project. Provision has also been made for generators and motorcycles. Small generators will be purchased for the field work (epidemiology and entomology) and the offices in Freetown and Makeni will be equipped with two big ones. The motorcycles will be used by the nurses for intensive supervision and monitoring.