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PROCEDURAL MANUAL
FOR
IVERMECTIN DISTRIBUTION PROGRAMMES

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INTRODUCTION

THE PURPOSE OF THE PROCEDURAL MANUAL

In 1987, with the registration of ivermectin for use in man, there became available, for the first time, a safe drug that can be distributed, once a year at least, on a large scale as a suppressive treatment for onchocerciasis or river blindness. Ivermectin kills the microfilariae of the parasitic worm *Onchocerca volvulus* in the skin, rapidly and with minimal reaction; it suppresses the production of microfilariae by the adult female worms for periods of 3-12 months; it prevents the further development of most clinical manifestations of the disease; and, if population treatment coverage is adequate, its effects on the human microfilarial reservoir can lead to a significant reduction in transmission.

Shortly after the registration of ivermectin, under the brand name Mectizan®, for the treatment of onchocerciasis, the manufacturers, Merck & Co. Inc., made the unprecedented announcement that they would supply the drug free of charge to all persons in the endemic area who suffered from onchocerciasis, for as long as it should be needed; and in support of this promise the Merck Mectizan® Donation and Humanitarian Programs were set up.

Since then, ivermectin has been used extensively in the Onchocerciasis Control Programme in West Africa (OCP) as a supplement to, and in places as a substitute for, larviciding operations against the *Simulium* vector. In addition, over the last 3-4 years, there has been increasing interest, on the part of ministries of health in endemic countries, nongovernmental development organizations (NGDOs) and aid agencies, in the use of ivermectin to control onchocerciasis and river blindness in the countries outside the OCP area.

In 1992, a group of NGDOs active in Ivermectin Distribution Programmes (IDPs) decided to improve the coordination of their efforts and to endeavour to expand them. To this end, they formed themselves into an open-ended NGDO Coordination Group for Ivermectin Distribution,¹ and established a post, within the World Health Organization's (WHO) Prevention of Blindness Programme (PBL) and the Filarial Infections unit of the Division for Control of Tropical Diseases (CTD) in Geneva, of Medical Officer, whose main task would be the strengthening of IDPs.

It was therefore decided to help promote the new programme by preparing the present Procedural Manual on Ivermectin Distribution. Its purpose would be :

(a) to assist ministers of health, in countries where onchocerciasis and river blindness are rife, in promoting and preparing national plans for the control of the disease by means of ivermectin;

(b) to provide practical guidelines for district management teams or workers at the district level who are charged with executing IDPs;

¹ The NGDO Coordination Group for Ivermectin Distribution currently consists of Africare, Christoffel Blindenmission, Helen Keller International, the International Eye Foundation, the Mectizan® Donation and Humanitarian Programs, the Organisation pour la Prévention de la Cécité, the River Blindness Foundation and Sight Savers.

(c) to provide information to other NGDOs or agencies which might consider initiating IDPs of their own.

The Manual has been written and edited by a team of authors, all of whom have had considerable experience of onchocerciasis and IDPs, and it has been printed by courtesy of the World Health Organization. It is written in the context of onchocerciasis in Africa.

It has been divided into three parts :

PART I - PLANNING IDPs

PART II - IMPLEMENTING IDPs

PART III - EVALUATION AND COST ASSESSMENT OF IDPs

Parts I and III will be chiefly of interest to those concerned with planning, setting up and evaluating the effects of IDPs. Part II, while also of interest to the planners, aims mainly to assist persons at the district level who will be responsible for implementing IDPs at the periphery.

Each part contains several sections.

References have only been included in those sections where recent and relevant technical advances have been made. The Manual highlights the expected long duration of IDPs to control onchocerciasis effectively. It emphasizes modalities of cost-effectiveness and affordability that need to be developed in all IDPs in order to aid agents of endemic country governments to be able soon to take over full control of the management of the programmes and sustain them in the light of budget constraints and many competing health priorities.

PART I

PLANNING IVERMECTIN DISTRIBUTION PROGRAMMES (IDPs)

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PART I

SECTION 1

DECIDING ON THE NEED FOR A NATIONAL IDP

The control of onchocerciasis is a very worthwhile public health undertaking. This is one of the few tropical diseases for which there is a readily available, safe and cheap solution, and whose control can give rise to definite socioeconomic benefits. All countries where onchocerciasis is endemic should therefore be encouraged to avail themselves of the benefits of an IDP.

Before deciding whether a country may have need of an IDP, it is necessary to obtain thorough background information on the onchocerciasis situation in that country. As much information as possible must be obtained about the public health and socioeconomic importance of the disease and its distribution in the country concerned. Some of this information can be found in published scientific literature, but it will often be necessary to complement this by interviews with national epidemiologists and entomologists having a good knowledge of onchocerciasis. These could be research workers, medical practitioners, or other health service personnel, particularly those working in rural areas. Detailed maps, to a scale of 1 : 200 000 or 1 : 50 000 may be studied to determine the distribution of rivers, waterfalls and rapids in the country and, therefore, the possible or likely breeding sites of the *Simulium* vectors.

I.1.1 Ascertaining a country's need for an IDP

Once sufficient knowledge has been acquired to show that onchocerciasis is a public health problem in the country concerned, efforts should be directed to determining whether an IDP is both necessary and feasible. Meetings with the persons responsible for rural public health and preventive medicine in the health service should be arranged, and finally the minister of health or the director of medical services (DMS) should be approached. The relevant information on onchocerciasis in the country may need to be presented to the ministry of health in order to facilitate a decision whether the country needs an IDP or not. During the ensuing discussion, the problem of onchocerciasis should be presented objectively, giving figures, whenever possible, on the severity and distribution of the disease in the country as well as the assessment of its public health and socioeconomic importance. It should be noted that there is a tendency to overlook the importance of onchocerciasis, which is a focal disease, found particularly in remote rural areas. Information should then be given on the status of onchocerciasis and its control in other, especially neighbouring, countries; and on the availability of a control measure in the form of ivermectin, which is a safe and effective microfilaricide *cum* microfilarial suppressant for use in affected communities.

Setting up an IDP needs to be clearly justified on public health and socioeconomic grounds.

After the problem of onchocerciasis has been expounded, the desirability of undertaking an IDP in the country should be considered and, if so, whether it should be combined with limited-term and/or localized *Simulium* vector control.

1.1.2 Promoting national IDPs

The setting-up of a national IDP should be discussed. It should be stressed that the distribution of the drug will need to continue for 10-15 years or more and that the ministry of health will need to make a commitment to sustain the activity once it has started. In order to make the activity sustainable, it has to be cost-effective and affordable. To ensure this, the best strategy is to integrate distribution with the Primary Health Care (PHC) system. Such integration has the added advantage of helping to strengthen PHC in the following ways.

(a) An IDP incorporates methods of intervention that are applicable for use against other diseases; and the associated training of health personnel renders them more efficient by imparting new skills to them which can be applied in similar situations.

IDP brings definite advantages for the health system of a country.

(b) Several international nongovernmental development organizations (NGDOs), noting the patient benefit that ensues immediately from ivermectin treatment, are interested in helping endemic countries to set up IDPs. A country desiring to set up such a programme can usually count on some NGDO assistance.

(c) If a PHC system does not exist in an area, ivermectin distribution may be an entry point for developing a PHC system. Community-based volunteers, trained to distribute ivermectin annually in the village, can be given further training in the treatment of other simple ailments (see section 9, Integration of ivermectin distribution with the PHC systems).

As has been shown in the area of the Onchocerciasis Control Programme in West Africa (OCP), the control of onchocerciasis paves the way for socioeconomic development in formerly deprived endemic areas. Although no objective studies have been made outside the OCP, communities in other endemic countries which receive ivermectin treatment are also reported to show improvement in their socioeconomic welfare.

PART I

SECTION 2

DURATION OF IDPS

The anticipated duration of ivermectin distribution programmes is a subject of considerable importance to both the donors of funds and national ministries of health. Unfortunately, in the present state of knowledge, it is very hard to make reliable predictions on this score.

The duration of programmes is frequently stated to be "at least 10 years" or "10 years or more". The figure of 10 years is based on the life-span of the adult worms of *Onchocerca volvulus* which, from experience of long-term vector control in the Onchocerciasis Control Programme in West Africa (OCP), has been shown to be of the order of 10-14 years. However, this simplistic estimate makes four important assumptions, none of which is likely to be entirely true.

The first is that the suppression of the microfilarial reservoir in treated persons will be complete; the second that coverage will extend to all microfilariae carriers; the third that transmission will be reduced by regular active annual mass treatment to a level at which no new infections, whether reinfections or superinfections, will be transmitted while the campaign continues; and the fourth that the drug has no effect on the viability of the adult worms.

Present knowledge on the effect of ivermectin suggests that IDPs need to be continued for a long time.

In fact, microfilarial concentrations do build up to a varying extent in the skin during the intervals between annual treatments, especially between the third and twelfth months. This rebound effect can be quite marked between the first two doses, but it tends to become less with each succeeding dose.

Likewise, coverage of the population in communities treated by active mass distribution, after taking account of persons falling under the manufacturer's exclusion criteria together with absentees and refusals, seldom amounts to more than 65%. However, since most of the heavy microfilariae carriers are likely to be covered by treatment, and many of those excluded (e.g. pregnant women and children under five) will be covered by later rounds of treatment, the overall reduction in the community microfilarial reservoir is likely to be higher than this, perhaps in the region of 80-90%.

If this degree of coverage can be maintained and extended to neighbouring communities over an area wider than the flight range of the local vector *Simulium* spp., it is to be expected, and it has indeed been observed in a number of studies, that transmission by the local vector population (as measured by the Annual Transmission Potential (ATP) and other entomological parameters) will be markedly reduced(1,2); and that detectable reductions will be observed in the incidence of new infections in 5-year-old children(3). Thus there will be a marked reduction, but not a complete interruption, of transmission.

In trials of monthly, 3-monthly and 6-monthly treatment with ivermectin continued over 1-3 years, a variety of adverse effects on the adult worms have been reported. Among them were a partial macrofilaricidal action on the females, a reduction in the number of adult male worms in the nodules, an increasingly prolonged failure of the females to resume embryogenesis to the microfilarial stage, and a reduction in the proportion of female worms which have been (re-)inseminated and/or (re-)fertilized. It has also been suggested that repeated 6-monthly treatment may exert a degree of prophylactic action on the early developing L3 and L4 stages in the human body, leading to a reduction in the expected proportion of young worms in the nodules. Unfortunately, there have, to date, been no reliable observations of changes of this nature affecting adult worms after more prolonged (i.e., >3 years) annual treatment.

The net effects of prolonged treatment on the adult parasites, whether given annually at the current standard dose (150 mcg/kg) or at more frequent intervals and/or at higher doses (e.g. up to 400 mcg/kg), is a topic that is currently under investigation by research. In addition, the partial effects produced by ivermectin on the viability and on a number of vital

reproductive functions of adult *O. volvulus* need to be studied and eventually entered into predictive computer modelling programmes of the type that have been developed in connection with the OCP(4). Predictive modelling could also be applied for varying degrees of population treatment coverage, and research on these lines might greatly help in predicting the ultimate outcome and the possible end-points for distribution campaigns.

Another aspect of the duration of campaigns depends on the clinical benefits that result from treatment. Reduction in blindness rates and severe ocular lesions, which is one of the prime incentives for the use of ivermectin, may only be readily detectable and appreciated by those living in the worst-affected African savanna zones having blindness rates above about 3%. Where onchocerciasis is prevalent but there is relatively little resulting blindness, the appreciated benefits will be the reduction in acute skin lesions and itching, the expulsion of intestinal worms (especially *Ascaris*) and the general feeling of increased well-being that often follows treatment, and which is in part responsible for the increased economic development seen in communities after their burden of onchocerciasis has been removed.

Unfortunately, there is a danger that, after some years, these benefits may come to be taken for granted by the recipient communities, without their realizing that the situation could deteriorate rapidly if treatment were to stop. This potential "recipient fatigue" needs to be countered regularly by using health education programmes to establish a lasting tradition of regular treatment and hence a demand for it to continue.

Until we have the results of current operational research aided by the use of modelling techniques, it will be hard to make reliable predictions as to the necessary duration of IDPs, whether these depend on the current annual schedule or on other regimens, yet to be explored, that may have greater effects on the adult worms. Although it is virtually certain that IDPs will have to continue for more than 10 years, provided the

More research on long-term effect of ivermectin and mathematical modelling will help predict the exact duration of IDPs.

distribution can be satisfactorily integrated with the activities of the PHC system, they should become sustainable at low cost as a routine part of health delivery, regardless of their duration.

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PART I

SECTION 3

FUNDING SOURCES

Sustained funding can be attracted to support national plans for controlling onchocerciasis by way of IDPs, especially since the drug is provided free of charge by the Mectizan® Donation Program. However, in the present competitive environment with funds for international health projects being severely limited, support can be secured only if IDPs are realistic in identifying potential funding prospects, focus their resources and energies on those with the greatest potential, and follow some basic requirements for the successful raising of funds. Competition for funding is intense, but the case for onchocerciasis control through ivermectin distribution will prevail over others, provided it is well presented to the right people.

1.3.1 Funding sources

Funding sources for national onchocerciasis control programmes in Africa can be categorized as external and internal.

1.3.1.1 External funding sources

The primary external funding source, with the means and experience to provide long-term support, comes from the donor nations and international agencies. Such funding can come either directly to the projects or through a multilateral intermediary, such as the World Health Organization (WHO) or the World Bank, the latter being privileged by having direct access to ministries of finance. Countries afflicted by onchocerciasis and river

blindness should associate themselves with WHO and its collaborating Nongovernmental Development Organizations Coordination Group for Ivermectin Distribution in order to create plans for nationwide control of the disease in a manner that will meet the requirements for funding by external donors, whether these are approached directly or indirectly.

Second in importance among external prospective donors are multinational corporations with major economic interests in a particular country. Most obvious are those extracting raw materials, but construction companies and sellers of consumer products should also be considered in a "prospective pool".

The third important source of external funding includes those NGDOs which are already participating, or which are prepared to participate, in IDPs. Many of them have long histories of providing service in particular countries and they have the ability to attract contributions, from individuals, corporations, foundations and the government in their home

Endemic countries need to know :

- where to go and
- how to present their case

to attract external funding for onchocerciasis control.

countries, for ongoing support of their field work in the control of onchocerciasis and blindness.

The most basic criterion for identifying prospective external funders is their relationship with the affected country, for example the historical colonial tie of a European nation to an African country, or the vested interest that an international corporation has in a particular nation. It is also vital that countries receiving external funds shall make sure that the interests of the donors are preserved and that donated funds shall be seen to be well spent.

1.3.1.2 *Internal funding sources*

Internal funding sources include first the government of the country that is afflicted by onchocerciasis. Support may come from the central or federal government level or from regional or local government levels. Up-front funding by the government demonstrates to potential external funding sources that the country has a firm commitment to onchocerciasis control.

The private sector also should be treated as a potential source of support. Every country has a wealthy class, and projects should, from the outset, identify individuals who might help with funding, particularly those who have ties with communities or regions where onchocerciasis is highly endemic. Businesses operating in affected regions of a country are excellent prospects. Lastly, broad public support is possible, but it is expensive and time-consuming to obtain and should, therefore, only be approached through an intermediary organization. For example, national religious organizations, service clubs, or fraternal organizations might be convinced to approach their members for support of an IDP.

1.3.2 **Fund-raising requirements**

The essential requirements in fund-raising are to have a strong case for support and to present it well. In seeking funds for onchocerciasis control, it is the strength and clarity of the national plan, the commitment and international credibility of the government and any participating NGDOs, the presentation as to how funds will be managed and allocated, and the careful attention to all the other ingredients of a good IDP as presented in this Procedural Manual, that will be the key to success.

Furthermore, in addition to presenting solid operational plans, the case for support must also put forward convincing arguments for making onchocerciasis control a priority undertaking, i.e., it must be emphasized that an effective treatment of the disease exists and one that can safely be used on a large scale; that the drug is available free of charge; that the IDP will strengthen the primary health care system; that the control programme will bring significant socioeconomic benefits for the country; and that it will produce measurable results in a finite period of time.

A well-developed national action plan is a useful document to show to donor agencies or organizations about the importance endemic countries attach to the control of onchocerciasis.

The case also requires clear statements of the total financial need, and of the contributions of each participating partner (national and local governments, expatriate organizations, etc.) towards meeting that need. The balance outstanding is the fund-raising goal.

The second requirement is to select project leaders with credentials that will gain the confidence of potential funders. Donors tend to base funding decisions as much on the standing of the persons responsible for the project as on the merits of the work to be done.

The third requirement is that, within national plans, the financial management and the procedures for overseeing the project shall ensure that funds will be spent only for their intended purpose.

The fourth fund-raising requirement is the selection of a chairman and a committee dedicated both to supporting the project and to assuming responsibility for raising the funds. These individuals can include high-level politicians, traditional leaders, directors of multinational corporate subsidiaries, leading medical authorities, etc. Their most important attributes will be a willingness to become informed and committed to the project and to make personal contributions, and their ability to gain entrée to potential funding sources.

The fifth requirement is to staff the fund-raising process. Each national IDP needs a resource-development specialist, whose functions are as follows :

(a) Create a list of prospective funders by working with the government and NGDO officials, and through a knowledge of economic interests within the country. The list must be edited to include the names of the most senior individuals associated with each potential contributor, and then each prospective donor must be rated according to the likelihood of gaining entrée and convincing the individual concerned to provide support.

(b) Prepare a case statement based on the national plan.

(c) Assist the project leaders in preparing specific applications for funds.

(d) Identify potential committee members and assist in recruiting them.

(e) Create a donor information and cultivation programme.

(f) Orchestrate approaches to potential funding sources.

PART I

SECTION 4

ORGANIZATION AND ADMINISTRATION OF NATIONAL IDPs; AND BASIC REQUIREMENTS FOR NATIONAL PLANS

National programmes must be run efficiently to achieve their goal and objectives since IDPs need to be carried out for a period of 10-15 years or more. The first step must be to establish a legislative instrument creating a National Coordinating Board, to which the organization and administrative responsibility of the IDP can be entrusted.

I.4.1 Organization of national IDPs

Membership of the Coordinating Board should include representatives, not only from the ministry of health, but also from other ministries, notably the ministry of rural development and the ministry of finance, in order to facilitate the execution of formulated policies. The chairman of the Board will normally be the director of preventive medicine or the director of disease control, and there should also be a representative from the Primary Health Care (PHC) coordination body. The secretary/executive agent of the Coordinating Board should be the National Coordinator for onchocerciasis control. Nongovernmental development organizations (NGDOs) that are engaged in the IDP, many of which are likely to be expatriate, should also be represented on the Board, as should interested UN agencies.

The functions of the Coordinating Board will include the following :

1. The formulation of policy guidelines for the implementation of the IDP.
2. Mobilization of resources.
3. Reviewing progress of the campaign and approving the annual plan of action and budget.

National IDPs must be run by a coordinating board with members from different ministries and supporting NGDOs, with a national coordinator as executive secretary.

I.4.2 National Coordinator

The National Coordinator should have a profile which combines competence in epidemiology and management of public health programmes with the skills of leadership and diplomacy.

His functions will include the following :

1. Drawing up the national plan, planning all operations, and taking technical decisions regarding the IDP.
2. Selecting/recruiting personnel and organizing training sessions for national staff in the IDP.
3. Drawing up timetables for the IDP and giving guidelines for its execution.

4. Preparing the budget and overseeing the financial administration.
5. Working with any expatriate NGDOs or donors, protecting their interests and ensuring that their funds are well spent.
6. Allocation of equipment, supplies and logistic support to the regions for the campaign.
7. Ensuring the procurement of ivermectin and its rapid duty-free importation, monitoring its safe storage and its delivery to the distribution centres.
8. Ensuring the effective supervision, monitoring and evaluation of the impact of the campaign.
9. Working actively to ensure the full and effective integration of the IDP into the PHC system.
10. Organizing meetings of the Coordinating Board.
11. Reporting the progress of the campaign to the Coordinating Board.

I.4.3 Administration of national IDPs

The onus of administering the entire national IDP will fall on the National Coordinator. The legislative instrument, which created the Coordinating Board, must therefore invest him with full authority to carry out the IDP in line with national policies. It is expected that local task forces will be formed which will report to the National Coordinator as the superior officer-in-charge of national onchocerciasis control. The National Coordinator will, in turn, report to the head of the department in the ministry of health which has overall responsibility for the control of onchocerciasis and, whilst ultimately the policies will be formulated by the Coordinating Board, the National Coordinator and his supervisor should also have direct access to the minister of health or the director of medical services.

I.4.4 Composition of task forces

Local task forces will normally consist of representatives of the PHC in the form of district health management teams (DHMTs) and local policy-makers, as well as representatives of expatriate or indigenous NGDOs.

Local task forces involving district health teams, policy-makers and local NGDOs must be formed to oversee the execution of IDPs at the periphery.

The personnel at the peripheral or district level will be the staff of the PHC system, who will be trained to supervise and monitor the conduct of the IDP in their districts. Village health committees will be encouraged to support, and even assume responsibility for, the distribution of ivermectin in their communities.

I.4.5 Logistics

The Coordinating Board will ensure that adequate logistical support is made available for conducting the IDP effectively. An office for the National Coordinator should be set up, with adequate administrative and technical support staff. The office should be fully equipped with both electronic and communications materials so as to be fully operational. Provision of transport, including 4-wheel-drive vehicles for use by the Coordinator in the field, should be assured.

I.4.6 Basic requirements for a national plan

The national plans for an IDP should contain certain minimum provisions. These include the following :

1. Reference to the administrative instruments creating a coordinating body, and appointing the National Coordinator.
2. A clear statement of the goal and objectives of the national plan.
3. A statement on the role of external donors, international agencies or NGOs involved in the IDP, and assurance that their interests shall be looked after and that their funds shall be well spent.
4. A statement on the technical activities which need to be carried out, with their time schedule, and including detailed measures for implementing, monitoring and evaluating the IDP. Among these will be the following elements :
 - (a) Description of the extent, severity and location of the disease, as well as a summary of the nature and results of endemicity surveys that have already been made.
 - (b) Citation of the location of endemic areas including, where relevant, an indication of the importance of infection from cross-border breeding sites in neighbouring countries.
 - (c) Description of any ivermectin treatment or other control measures already under way.
 - (d) The operational plan for distribution of ivermectin, including :
 - (i) organizational structure;
 - (ii) training needs;

National plans must have good and clear objectives, operational plans with time schedule, plan of integration into PHC systems and budget and assurance of fiscal control at all levels.

- (iii) time-tables and expected coverage;
 - (iv) nature and extent of any intended additional surveys;
 - (v) role of NGDOs and international agencies.
- (e) Assurance of effective procurement, storage and delivery procedures for ivermectin supplies.
 - (f) Provision for effective reporting, supervision, monitoring and evaluation of the IDP and for its financial administration.
 - (g) Explanation of the personnel and material resources required at the various levels of programme implementation.
 - (h) Budget requirements, differentiating those needs to be provided by external resources, those contributed by the private sector, and those to be supplied by the various levels of internal administration (e.g. national, state/provincial/regional, district, local government area, village).
 - (i) Assurance of adequate fiscal control at all levels.
 - (j) Schedule for progressive phase-out of external financial assistance, related to considerations of sustainability, cost recovery (in *re* Bamako Initiative) and incorporation into PHC delivery systems.

The application of these measures, or their modification or adaptation to suit local conditions, will go a long way towards ensuring that national IDPs are adequately organized and have sufficient administrative safeguards to ensure their efficacy, cost-effectiveness and sustainment.

PART I

SECTION 5

COOPERATION WITH THE MECTIZAN® DONATION AND HUMANITARIAN PROGRAMS; APPLICATIONS FOR SUPPLIES OF IVERMECTIN

I.5.1 The Mectizan® Donation Program

The objective of this unique programme of Merck & Co. Inc., is to promote the distribution of ivermectin (available free of charge as Mectizan®) by large-scale treatment programmes.

The Mectizan® Donation Program, on the advice of The Mectizan® Expert Committee (TMEC), provides ivermectin tablets to large-scale distribution programmes, which are community-based and have been developed along specific guidelines based on sound epidemiological principles employing strategies designed to reduce blindness and other manifestations of onchocerciasis in an efficient way.

Merck Humanitarian Program

The Merck Humanitarian Program has been established to provide ivermectin to individual doctors dealing with diagnosed onchocerciasis cases and treating relatively small numbers of onchocerciasis patients in hospital or clinical practice.

If a humanitarian distribution programme becomes too large, the possibility of changing it into a large-scale distribution programme is considered.

Communication links and other functions

To achieve these objectives, good and regular communication between Merck, TMEC and the directors of IDPs in the field is essential.

At the Merck Paris office, the Medical Director keeps permanent contact with the field and pays regular visits to the endemic countries. He liaises with TMEC concerning all the problems which can occur in the field; he clarifies reports of adverse experiences and receives field complaints, such as preference for dosage based on height as a surrogate for the weight of the patient, problems with tablet presentation, etc. When possible, joint field visits and field staff briefings with all parties concerned are organized. During field visits, questions raised by TMEC concerning the management of programmes are investigated.

I.5.2 Making application for supplies of ivermectin, its importation and storage

Applications for supplies of ivermectin for large-scale distribution programmes have to be made on special forms obtainable from :

The Executive Secretary of TMEC
The Mectizan® Donation Program
Carter Center
One Copenhill
Atlanta, Georgia 30307
U.S.A.

It is prudent to allow for a period of six months between the application and the supply of ivermectin tablets.

(FAX : 1-404-872-9231;
PHONE : 1-404-872-4122)

They need to be endorsed by the ministry of health of the country in which the programme will take place. TMEC organizes regular meetings to examine the applications received from the field and much business is done between meetings by fax and telephone. Nevertheless, application forms should be prepared and sent in well in advance of the date when the supply of the drug will be needed. The total turn-round time between sending in the application form and receipt of the drug is likely to be about 6 months, whether it is an initial or a repeat application.

Along with the application form, the director of each ivermectin distribution programme is sent a form requesting all available shipping information. This ensures that tablets are sent after manufacturing by the most appropriate route to the correct consignee on time. In the Merck manufacturing plant, production is planned in conformity with the needs of the field and is forecast quarterly. The Merck Paris office has to be especially watchful of the monitoring of shipments. All shipments are made from France on a total free-of-charge basis, including the payment of all taxes and duties.

It is recommended that the ministry of health of endemic countries liaise with the ministry of finance and the customs service in order to ensure that the recipient distributing organization can easily clear the tablets through customs free of duty and then convey the tablets rapidly from the local distribution centre to the field.

Applications from individual medical practitioners for relatively small supplies of Mectizan® for treatment of patients should be made direct to :

Dr P. Gaxotte
Merck, Sharp and Dohme Interpharma
106 Avenue Jean-Moulin
78170 La Celle St Cloud
France

(FAX : 33-1-30-82-06-35; PHONE : 33-1-30-82-10-37)

Since the shelf life of ivermectin in the tropics is only two years, it is essential that the ivermectin be stored with care. Further, security precautions should be undertaken in order to avoid any misappropriation of the product.

PART I

SECTION 6

STRATEGIES FOR THE DISTRIBUTION OF IVERMECTIN

Three basic strategies have been developed for ivermectin distribution. They are :

- (1) distribution using mobile team
- (2) distribution by community-based distributor
- (3) clinic-based distribution

In the past, (1) and (2) have been called active distribution and (3) passive. This is because (1) and (2) carry out treatment in the communities or villages and are able to achieve a high coverage of the population. They were therefore recommended for treatment of communities with prevalence above the threshold value which indicate communities where virtually all the serious onchocerciasis manifestations are presumed to exist, in other words, large-scale ivermectin treatment. In contrast, clinic-based distribution was assumed to be only able to provide treatment to persons who attend clinics on their own freewill and was therefore assumed to be appropriate for treatment of communities with prevalence below the threshold level, where high coverage is not essential, in other words, small-scale ivermectin distribution. It is now believed that clinic-based distribution combined with intensive public health messages and information can fulfil the requirements of large-scale ivermectin treatment and can be an effective and affordable strategy which is very likely to be sustained. Large-scale ivermectin treatment can therefore employ all three strategies.

The choice of strategy depends on the number of clinics and professional health workers located near to the endemic communities; on the availability (short-term and long-term) of transport and money to pay field allowances; and on the availability of community health workers in the endemic communities. Cost-effectiveness is a very important factor in considering the choice of strategy since it determines its likelihood to sustain. However government policies may occasionally influence the choice of strategy.

Large-scale ivermectin
distribution can be
community- or clinic-based.

I.6.1 Mobile team

With the mobile-team strategy, two or more health professionals travel from one community to another to distribute ivermectin. For at least a few hours each year the drug is thus made available at a central location in each endemic community. The strategy makes heavy use of vehicles or motorcycles and depends upon regular payment of field allowances.

Mobile teams have been widely employed by the Expanded Programme on Immunization (EPI) but have been sustained only as a result of unprecedented lobbying and commitment of funds by national governments and major international donors. Future

operational trials may show that it is practical to "piggy back" the mass distribution of ivermectin and other drugs onto EPI mobile team campaigns, since the combined distribution would offer treatment to almost the whole population - those of five and over receiving ivermectin and the under-5s receiving vaccine. However, at present, EPI mobile teams tend to reach only a small percentage of the most remote communities where onchocerciasis is at its worst, and the use of mobile teams to distribute ivermectin alone appears to be an expensive strategy that few programmes can sustain.²

1.6.2 Community-based distributors

Community-based distributors (CBDs) are non-professionals trained to work unaccompanied to register people, weigh them or measure their heights, and treat them with ivermectin. CBDs can either distribute the drug from house to house or dispense it from a central location. Even though most CBDs have no prior experience as health workers, it typically takes only three days to train them adequately. In one week one CBD can distribute the drug to up to 500 people. Typically the CBD keeps a record with the names and addresses of all the people he or she has treated. In this way programme staff can visit the village and perform a spot check on a random sample of households to determine whether the CBD has made any mistakes in ivermectin administration or produced any fraudulent records.

Unlike mobile teams which as a rule are programmed to stay in a village for a few hours only and return to headquarters, CBDs live in the target village and are available to dispense the drug and manage any reactions 24 hours a day for several days in a row and require no use of vehicles.

Although community-based strategy achieves maximal coverage, CBDs must be motivated (e.g. provided with a monetary or non-monetary incentive) and they must be supervised by a health professional. Thus, a strategy using CBDs can only be sustained over many years if health administrators, donors and/or communities themselves will continue to commit funds and attention.

Community self treatment : This is essentially community-based distribution using the concept of CBDs. The essential elements are empowering the communities to be responsible for carrying out their own treatment.

The communities are given the requisite information and education on onchocerciasis and its treatment with ivermectin.

Community-based distribution is cost-effective, affordable and has potential for sustaining when it is carried out by a trained person from the community with the community's support.

² One exception appears to be the programme operated by CBM in Sierra Leone. By making use of the staff and facilities at their eye hospital in Lunsar they have been able to operate a very cost-effective mobile team ivermectin distribution programme.

Community leaders are requested to select one or more of their own members, preferably literate, who will be trained to carry out the distribution.

The question of remuneration is left to the communities to decide. In some countries, they are volunteers but in others, a sort of remuneration will be required which is worked out in local terms.

The training of the village worker can take only a few hours if record-keeping is kept to a minimum. IDPs may need to develop "illiterate" record-keeping material for communities where there might be no literate.

The advantages of community self treatment, empowering the community to be responsible for their own treatment, appear to have the elements which will ensure sustainability of ivermectin distribution.

It is affordable to the community, entails little cost to the health service and promotes community advocacy. In future and for regular long-term annual treatment, when no adverse reaction from ivermectin is expected because of low individual infection loads, this advocacy can be developed further. The communities will be requested to assume the responsibility of picking up their pack of tablets from the nearest health centre and account for them after distribution.

I.6.3 Clinic-based distribution

The simplest way to distribute ivermectin or any other pharmaceutical is through existing clinics, health centres and hospitals. This is sometimes referred to as "fixed-centre" strategy. Each of the countries in which onchocerciasis is endemic has an extensive network of clinics operated by the government, churches or other non-profit organizations. However, there are several reasons why many health planners have assumed that clinic-based distribution of ivermectin will have little impact. First, the majority of people blinded by onchocerciasis live in small, remote villages 10 km or more from a clinic. Transport in these rural areas is sporadic and relatively expensive. For these reasons, clinic attendance drops off rapidly as the distance from the patient's home to the clinic increases.

To make matters even more difficult, the hours of operation of rural clinics are sometimes unpredictable and, because of past experience with shortage of drugs and insensitivity of modern health professionals, many of the public may be reluctant to make use of clinic services. Due to such factors, many public clinics in developing countries are now under-utilized and nearly dormant.

Foreign donors promoting public health interventions often prefer to develop "vertical" strategies that can function and succeed because they permit centralized control and monitoring and by-pass many of the administrative problems of the health service bureaucracy.

In spite of the bias against clinic-based delivery of services there are several reasons why this strategy warrants closer examination.

(a) It is the cheapest of strategies. This is because distribution itself (as opposed to the publicity required to motivate people to seek treatment) uses only existing personnel and requires no field work.

(b) Many clinics are located in market towns that are visited at least once a year by a high percentage of people living in surrounding communities. Although it may be impractical for remote communities to depend upon existing clinics for treatment of many other health problems, it may still be feasible for people living far from a clinic to travel to that clinic once or twice a year at their convenience to collect a prophylactic drug.

(c) Experience with existing IDPs³ has suggested that there is great popular demand for ivermectin in endemic communities even when people must travel long distances and wait in line two or more hours to obtain the drug.

(d) In order to make health services viable, new public health interventions should be integrated into and strengthen the existing health service rather than divert funds, personnel and administrative attention to single-purpose programmes.

(e) In some countries, ministries of health are now implementing the Bamako Initiative or cost recovery for treatment with essential drugs. Cost recovery policies, if properly implemented, should lead to greater availability of drugs, and provide incentives to clinic staff who will be more responsive to the wishes of their "customers", and thus lead to a greater demand for clinic services.

Thus, there are important reasons to invest in clinic-based delivery of health services. It must however be kept in mind that the follow-up of adverse reactions to ivermectin treatment is very difficult. Generally, this does not appear to present a public health problem as severe adverse reactions are extremely rare. The majority of these rare cases occurs after the first round of treatment in individuals with a high level of infection. While no case of death has ever been traced to the effects of ivermectin, serious reactions may instill enough fear in a community to cause high refusal rates. Therefore, in areas where the main mode of distribution is health centre-based, it is recommended to provide the first round of treatment to hyperendemic communities through mobile teams to allow for better follow-up of possible adverse reactions. After the first round of treatment, the risk of serious adverse reactions is negligible and all persons can receive treatment in the health centres.

If properly developed, clinic-based distribution will be a cost-effective, sustainable professional way of carrying out ivermectin distribution.

In conclusion, it should be noted that as soon as possible after setting up IDPs, strategies adopted, after consideration of safety issues, may need to be modified in the light of cost-effectiveness and sustainability. Local conditions will also play an important role as to the choice of the ultimate strategy to implement.

³ Particularly the experience with the Africare/IEF programme in Kwara State, Nigeria.

PART I

SECTION 7

**PROGRAMME BUDGETING, BUDGET REVIEWS, COST ACCOUNTING AND
FISCAL CONTROL FOR IDPs**

I.7 Introduction : concepts and rationale

Programme budgeting and accountability are aspects of a cyclic management control system. They form an integrated process for thinking about how resources should be used to accomplish a broad goal (of delivering ivermectin to those who are most likely to suffer from the effects of onchocerciasis). They are parts of a management system that relate planned and actual activity in the context of a defined mission through a narrower set of measurable objectives. Programme budgeting is a planning process for costing out the resource needs of a project by programme component (large task group) and by expenditure type. Accountability is the process of demonstrating that resources have been used responsibly toward achieving the objectives outlined in a project's action plan.

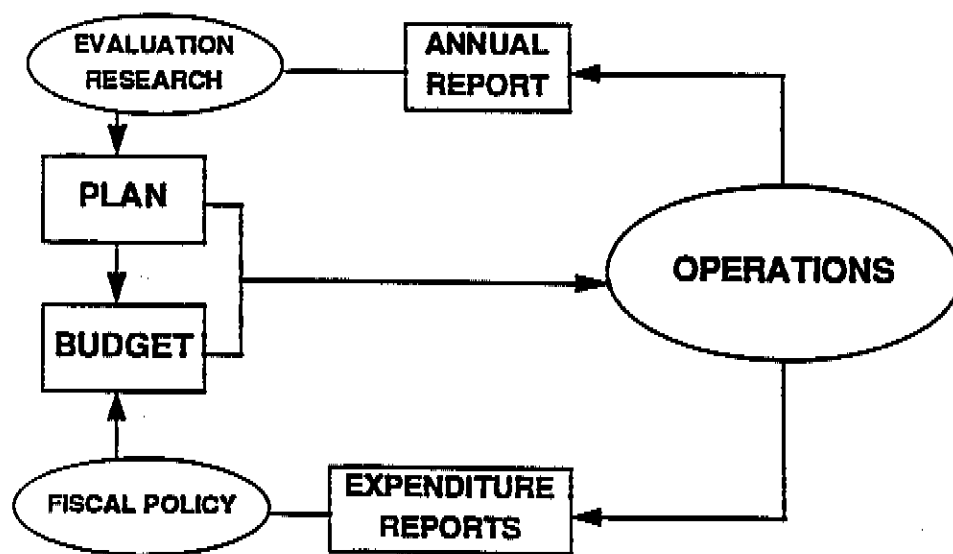
The building block of such a system is a set of commonly defined programme components that standardize reporting and analysis; and, in any regional IDP, there would be obvious advantages in having a uniform system of budget reporting forms and procedures. Each programme component has its own set of measurable objectives to be accomplished within a reporting period. Within the standardized structure of programme components, flexibility exists to accommodate local conditions and to set objectives based on the local context. Reports, plans, and budgets are all organized according to these programme components.

Four sets of documents are used to analyse and communicate programme progress and results :

- An action plan
- An annual budget
- An annual report
- Periodic financial reports

Creating an action plan is a prerequisite to creating a budget. The action plan is a description of what is to be done, in what manner, and when, and what resources it will take to accomplish the tasks and achieve the desired results. Having a clear understanding of the environment, the constraints, and programme needs is basic to preparing an action plan. A programme budget is the result of calculating the costs of the resources identified in the action plan.

PROGRAMME BUDGETING: INFORMATION FLOW



Accountability is communicated through periodic expenditure and programme reports, as well as an annual report, by comparing what has actually taken place with what was planned. The analysis of the data necessary for producing these reports becomes part of the research necessary for producing the next year's action plan.

The purpose of programme budgeting and reporting is to satisfy the information needs of a wide variety of audiences. Decision making is at the heart of information needs. Funding agencies may consider the action plan as a proposal, a competitive bid for funding. A sponsoring organization may use the progress and expenditure reports in planning cash flow or for recognizing the need for a policy or procedural change in all projects. Donors may use the annual report as an indication of how well their contributions are being used. Project management may use all of the information in deciding how to adjust to changes in the environment.

PART I

SECTION 8

SUSTAINING IDPs

When considering how national governments can sustain IDPs initiated with support from outside donors, account must be taken of the unique characteristics of such programmes.

(a) The drug ivermectin is provided, free of charge, as Mectizan® by the manufacturer, Merck & Co. Inc., under their Mectizan® Donation Program for large-scale distribution by community- and clinic-based treatments, or under their Humanitarian Program for small-scale clinic-based treatment.

(b) Initially, the major costs of distribution in most endemic countries are funded by external donors, mainly nongovernmental development organizations (NGDOs), agencies etc.

(c) Above a certain pre-selected prevalence of onchocercal infection in any community, large-scale distribution of the drug has to be carried out at least once a year over an indeterminate period, at present estimated as being 10-15 years or more.

Such long-term programmes will inevitably lead to donor fatigue, so it is imperative that, as soon as possible, they be integrated with, and financed and staffed by, the health services of the countries concerned. If programmes are to be sustained long enough for them to produce the real benefits that will stem from suppressing the manifestations of onchocerciasis and reducing transmission, this responsibility must be accepted and effectively implemented by the ministries of health in countries afflicted by the disease.

1.8.1 The parties concerned and their constraints

There are a number of constraints to sustainment, which stem from the conditions imposed by the parties concerned.

1.8.1.1 *The Manufacturers, Merck & Co. Inc., and The Mectizan® Expert Committee (TMEC)*

The manufacturers require that the exclusion criteria for ivermectin be observed; and that adequate provision be made to deal with severe adverse reactions. Drug stocks must be well controlled to avoid exceeding the expiry date, sale or theft of the tablets, too high or too frequent dosing, and misuse of the drug for the treatment of animals.

In remote parts of developing countries, it is often difficult to comply rigidly with these conditions. However, the proven safety of ivermectin implies that some of the exclusion criteria and after-care provisions may eventually become issues of less concern.

Elements of constraints towards sustaining IDPs can be minimized if all parties concerned would hold open dialogues on their difficulties with the view to reaching a mutual understanding.

1.8.1.2 The Donors of Funds for Ivermectin Distribution Programmes

The donors of funds do not want to enter into long-term, open-ended commitments. Their first objective is to set up good health education programmes based on the findings of Knowledge, Attitudes and Practices (KAP) and focus group studies. These will create and maintain a demand for treatment and prevention of onchocerciasis and river blindness at all levels, especially at the periphery. As a result, ministries of health will perforce be obliged to take over the long-term control and financing of ivermectin distribution as soon as possible.

1.8.1.3 The Ministries of Health and the Health Services in the Countries Concerned

The ministries of health are under constraints from shortage of funds and of trained personnel, and are faced by a multitude of health problems competing for their limited resources. They do not favour vertical programmes, which are liable to founder when donor interest flags, and thus they prefer self-sustaining horizontal programmes, integrated with the PHC system or other health delivery programmes.

1.8.1.4 The Inhabitants of the Infected Communities

The ultimate recipients of ivermectin may initially have little understanding of the disease onchocerciasis which afflicts them. Its significance, and the benefits of ivermectin, must be brought home to them, either directly or *via* their village health committees, so that regular annual treatment comes to be traditional, and a demand for its continuation is created.

1.8.2 Setting up IDPs so as to ensure their sustainment

Unless IDPs are correctly set up at the outset, with sustainment in mind, they will be liable to collapse. To this end, early and positive action will be required of ministries of health, and the following elements are essential.

IDPs must aim at factors which promote sustainment right at their inception. These include community advocacy and integration into the PHC system.

(a) Adequate assessment and appreciation of the public health and socioeconomic importance of onchocerciasis in the country concerned; and of the development benefits, similar to those seen in the Onchocerciasis Control Programme in West Africa (OCP), that may be expected as a result of its control.

(b) Realization that in ivermectin there is now a safe drug, available free of charge, that can be used on a large scale to suppress and control onchocerciasis. Onchocerciasis is now a disease for which there is a relatively simple solution.

(c) Establishment of signed agreements, as necessary, with donor agencies, NGOs etc., for the initiation of IDPs which, within a period of no more than two years, will begin gradually to be integrated with, and to be staffed and financed by, the local country's health services, in a phased manner and according to an agreed timetable.

(d) The preparation of a national plan for control of onchocerciasis, to be designed and executed under the leadership of a competent National Onchocerciasis Coordinator, with assistance from a competent staff with the involvement of the PHC in the form of DHMTs of affected districts.

(e) Promotion of KAP and focus group studies to guide the development of a health education programme designed to draw the attention of its recipients to the benefits of ivermectin, not only for onchocerciasis, but also as a deworming agent. Village health committees need to collaborate with PHC staff at the district level so as to arrange for collection of ivermectin, to fix treatment days and to reinforce the education message. Only by establishing a "tradition" of annual treatment, and by creating a demand from the people at the periphery for it to continue, will pressure be put on the government to make sure that the programmes continue.

(f) Institution of adequate health education and training programmes for health staff at all levels, including village health committees and community-based distributors (CBDs).

(g) Understanding the mechanisms, conditions and lag-time involved in making applications for free ivermectin supplies through TMEC; ensuring that the ministry of finance will issue and enforce orders to the customs service so that the drug shall be imported rapidly and duty-free as often as necessary; and ensuring that its delivery, from the port of importation to the peripheral distribution points, is carried out rapidly and efficiently.

(h) Planning and implementing the integration of ivermectin distribution with the PHC system or with other systems of health care delivery; and the establishment of an acceptable system for the recovery of distribution costs in accordance with the Bamako Initiative.

(i) A concerted effort to effectively decentralize health services.

I.8.3 Means of ensuring subsequent sustainment

The essential elements of sustaining IDPs that have been set up correctly are as follows; and sustainment may be modelled in some respects on the devolution policies adopted by the OCP.

I.8.3.1 *Distribution Methods*

These are discussed in Part I, Section 6.

I.8.3.2 *Costs to be Met*

Whatever distribution method is adopted, arrangements will have to be made to meet its local costs, which are as follows :

An IDP with a high running cost including staff allowances is unlikely to be sustained.

(a) For large-scale distribution to be carried out in the communities

- (i) Wages, per diem and transport costs of distributors and their supervisors.
- (ii) Cost of palliative medicines for treating reactions.
- (iii) Cost of the ivermectin delivery chain from the central importation point to the peripheral (regional, district or village) distribution centres.
- (iv) Maintenance of health education activities.
- (v) Salary, benefits, transport and office overheads for planners, administrators and evaluators.

(b) For clinic-based distribution

- (i) Additional training of pre-existing health centre personnel, and their periodic refresher training and supervision.
- (ii) Keeping of records of persons treated and their communities of origin.
- (iii) Maintenance of health education activities.

1.8.3.3 Sources of Local Funds

Establishing a secure future long-term local financial base for IDPs demands the following developments from the country concerned.

(a) Line items for ivermectin distribution in the central or regional budgets of the country's health services.

(b) Philanthropic financial support for distribution from private or commercial in-country resources.

(c) A system for recovering the local costs of distribution from recipient individuals or communities, which is agreed as fair and just by the recipients of the drug.

1.8.3.4 Evaluation

Evaluation is the last important element of sustainment and is one which may still, by mutual agreement, involve donor funding and supervision in order to ensure impartial assessment of the programmes. It is dealt with in Part III, Section 1.

1.8.4 Conclusions

Long-term sustainment of IDPs thus depends primarily on good mutual understanding by all parties concerned of their various problems; on open dialogue to resolve any difficulties arising; and on the willingness and determination of ministries of health to take over the management and financing of programmes from the donors. It depends on thorough planning, proper training of staff, and good supervision and monitoring. It demands early planning and forward-looking action by the health services in the countries

concerned, working in close cooperation with any donor organization that has assisted in the initiation and implementation of the programme.

Above all, it is vital that all these activities be urged on by the demand for continued treatment that is likely to come from the communities that were formerly severely affected by onchocerciasis, and which will, by then, have established a tradition for annual treatment.

PART I

SECTION 9

INTEGRATION OF IVERMECTIN DISTRIBUTION WITH THE PRIMARY HEALTH CARE (PHC) SYSTEMS

I.9.1 Rationale for integration of ivermectin distribution with the PHC system

The rationale behind integration of ivermectin distribution with the PHC system is to ensure that the annual distribution will be cost-effective, affordable and sustainable. Integration of an IDP with the PHC implies and ensures that communities are empowered to assume the responsibility for the care of their own health. It creates an awareness and a demand for treatment from the beneficiaries, who will also be involved in the financial and administrative responsibility vested in the hands of their village health committees. These measures are important to ensure the sustainment of an IDP since IDPs are presumed to continue for 10-15 years or more.

Ivermectin has proven to be a drug that is highly sought after not only by reason of its effects on onchocerciasis but also because of its other properties such as expulsion of intestinal worms and a feeling of general well-being and vitality. Because of these many benefits, populations are prepared to pay a small fee for the service rendered during ivermectin distribution. Collection of a fee, which conforms to the Bamako Initiative, together with added responsibility to the village health committee, may be seen as an element for strengthening the PHC.

I.9.2 The district-level management structure and its activities

The district level has a fundamental part to play in all health development activities, particularly in disease monitoring and control. The operational management structures at district level include the district development committee, the district health committee and the district health team. The two committees collaborate with the district health team to manage and supervise the district health system. Operational support for the health team is provided through district hospitals, health centres and health posts. The functions of the district management structures are to prepare health plans, organize and monitor community health activities, and produce health activity reports.

There is a need for decentralization of the health system which should be correctly set up with clearly defined functions on management, training and surveillance.

The health team is the effective implementing agency for all health activities within the framework of Primary Health Care. However, the health team coordinates its activities with those of the development and health committees, particularly for the purpose of mobilizing communities and raising resources.

The health team has three main functions - management, training and investigative.

(a) Management functions

These include :

- health situation analysis and epidemiological mapping;
- preparing operational plans to deal with priority diseases in the district;
- supervision of health team members;
- drawing up management and evaluation reports on diseases and on programme implementation;
- mobilization, management and distribution of resources.

(b) Training functions with the objective of preventing and controlling disease

These include :

- determining district training needs;
- organizing group learning activities - workshops, seminars and training sessions for health team workers;
- application of appropriate technology for the diagnosis and treatment of endemic and other diseases;
- epidemiological surveillance;
- control of epidemics.

(c) Investigative functions

These include :

- participation in investigations organized by the health team itself or by workers from other levels of the health service, particularly into the attitudes and practices of the population in relation to various diseases;
- carrying out morbidity/mortality surveys for epidemiological mapping so as to improve surveillance and case-management.

Health posts and health centres constitute the first line of contact between patients and the health system, whether passively by waiting for patients to report, or actively by outreach activities in the communities. These health facilities have responsibility for collecting information on health matters, such as suspected epidemics, which require action. They must forward reports to higher levels if support is needed, and they must mobilize the

communities for participation in health activities. The district hospital or endemic diseases centre is usually the point to which health posts and centres refer cases for management. Either of these bodies may participate in further epidemiological studies along with the health team; and they may provide training and supervision in diagnosis and treatment for the health team staff.

It is now widely accepted that a carefully defined package of health activities should be designed for implementation at the district level, and this should include : basic health care, priority health interventions and health-related interventions.

Implementation of this package demands the key elements of community participation, intersectoral collaboration, affordable technology, equity and social justice. The design of the package must take into account the minimum components of the Alma-Ata Declaration, namely, education on prevailing health problems and the methods of preventing and controlling them; adequate food supplies and proper nutrition; an adequate supply of safe water and adequate sanitation; maternal and child care, including family planning; immunization against major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and the provision of essential drugs. The burden of communicable disease is so high, especially in Africa, that most countries give priority to disease control in their minimum packages.

I.9.3 The role of district-level health structures in relation to ivermectin distribution for onchocerciasis control

The district level health structures have a vital role to play in carrying out ivermectin distribution and their cooperation is required for these IDPs to be integrated with the Primary Health Care system and in order to sustain over the long period of time that they need to be continued.

A well-developed district health system has a clear role to play in overseeing the planning, implementation and evaluation of ivermectin distribution in the district and ensuring the sustainment of the programme.

District-level health teams and their associated committees should be involved in rapid epidemiological assessments to determine the distribution and severity of onchocerciasis in their communities; in community education and mobilization; in the delivery of ivermectin supplies to the periphery; in large-scale distribution of the drug, as well as small-scale treatment; in the management of patients who react adversely to treatment; and in the record-keeping, monitoring and evaluation of the programme. The health authorities at the district level must cooperate with other organizations involved in the IDP and must plan carefully all the sequential activities that are needed.

The availability of ivermectin (in the form of Mectizan® at no cost) as a suitable drug for the large-scale control of onchocerciasis has provided the district health teams in endemic countries with an important primary health care activity. The health teams also have to identify suitable community-based health workers from the affected communities and train them to distribute the drug correctly and keep the necessary records. Finally the health team has to supervise and monitor all these activities.

I.9.4 Use of ivermectin distribution in developing PHC

The ideal management structures and institutions described above may not be found in every district. IDPs will have to start with what exists and endeavour to build up a more complete system. For this purpose close collaboration between the community leaders and the district-level administration will be crucial. Where there is no PHC, however, ivermectin distribution

IDPs may serve as an entry point for developing PHC where it is non-existing or serve to strengthen it where it is poorly developed.

can be used to initiate a PHC system. The steps in setting up an IDP with a view to putting in place a sustainable mechanism include health education messages. These should teach the communities to assume responsibility for receiving ivermectin treatment once a year; and, along with this, the village is encouraged to form a village health committee to oversee the interest of the community in this regard. In the absence of PHC, the village health committee should be encouraged to assume the additional responsibility of caring for other essential requirements of their health. In the event that cost recovery for services in connection with ivermectin distribution *per se* (i.e., excluding the cost of the drug) is current, the groundwork is set for building up a financial capital, based on the Bamako Initiative, that will later be used to acquire a stock of essential drugs to cater for the health of the community. This can form the basis for PHC development in the communities in question.

Working together with the office of PHC in the ministry of health will ensure the coordination of this effort and facilitate the addition of other necessary health care, e.g. maternal and child health, family planning, Expanded Programme on Immunization, etc. Collaboration with the PHC system will help to further facilitate the requisite training of the village health worker to carry out these tasks, and also the development of managerial skills, such as an accountancy system, which need to be put in place. Once developed through IDPs, the PHC will in turn ensure that ivermectin distribution will be sustained in the community.

I.9.5 Problems and methods of cost recovery

Cost recovery for services undertaken in the distribution of ivermectin is in conformity with the Bamako Initiative. A fee for service could therefore be considered. However, since the drug is donated free of charge by Merck & Co. Inc., no charges can be made for the drug itself.

In order to represent true cost recovery, an estimate must be made as to what the cost of ivermectin distribution will be. This calculation should not include the start-up costs but consider only the recurrent costs of ongoing distribution. This cost will vary considerably depending on the existing infrastructure. If ivermectin can be integrated into a functional primary health care system that already provides services to communities on a regular and reliable basis, the cost of adding on ivermectin distribution will be modest and can be recovered fully. This is providing the PHC system includes the concept of a cost-recovery system.

In areas where ivermectin distribution is actually used to promote and strengthen PHC, the recurrent cost may be so high that the price per person treated would mean that the majority of the population could not afford the treatment. In this case, a reduced fee for service could still be charged to contribute to the funds required to sustain ivermectin distribution. The fee for service could be collected at the health centre at the time of treatment or by PHC staff working in outreach activities. They would need to be trained to collect the fees, to account for them, and to hand them over to a designated person on return to the health centre. Alternatively, a system could be created through the village health committee, which will be responsible for managing the funds.

Cost recovery for service of delivering ivermectin may, as well as offering financial incentive to the PHC, cause reduction in ivermectin distribution coverage.

Measures need to be taken to avoid penalizing families with large numbers of children and to cater for the poor and destitute.

The potential benefits and costs of a "cost-recovery" system to an ivermectin distribution programme should be assessed carefully. Shortage of funds to support the programme may dictate the introduction of a fee for service. In some cases, having to pay for the treatment may also raise the perceived value of the service.

Problems in connection with a cost-recovery system include the following :

- A mechanism must be put in place that prevents embezzlement of funds generated. Regular supervision and auditing should be instituted to avoid abuse.
- In areas where treatment is carried out by community volunteers, having to collect a fee may put an unreasonable additional burden (and temptation) on the volunteer. Additionally, supervision will require more time as the funds generated must match up with the reports of number of people treated.
- The coverage rate will always be negatively affected. In areas with very high demand for ivermectin the demand may not be affected. Limited experience suggests that certain groups of the population are particularly affected by having to pay for the service. As onchocerciasis is often seen as a disease of old people, a family may consider the treatment of their children an unnecessary expense. Therefore, the programme will have to institute a system that allows treatment of the poor and destitute who cannot afford to pay for the service, and that does not penalize families with large numbers of children. A possible solution could be a family card which allows treatment of children under a certain age free of charge. In any case, IDPs introducing fees should monitor the impact on the demand for ivermectin, especially by women, children, and economically disadvantaged social groups.

PART II

IMPLEMENTING IVERMECTIN DISTRIBUTION PROGRAMMES (IDPs)

PART II

SECTION 1

**DETERMINING ONCHOCERCIASIS ENDEMICITY LEVELS AND THE
SELECTION OF COMMUNITIES FOR TREATMENT WITH IVERMECTIN**

II.1.1 Methods of Rapid Epidemiological Assessment (REA)

Classically, endemicity levels have been assessed by taking qualitative or quantitative skin snips to determine the prevalence and intensity of onchocerciasis in a community. Intensity is often recorded as the Community Microfilarial Load (CMFL). Unfortunately, skin snipping is costly and time-consuming, requiring skilled personnel, vehicular transport and microscopic equipment. It is also somewhat unpopular with examinees and it incurs the risk of transmitting HIV and the hepatitis virus.

Recently, more simple methods of Rapid Epidemiological Assessment (REA) have been developed. They depend on determining the prevalence of nodules or, with less sensitivity and specificity, the prevalence of "leopard skin", or the blindness rate.

II.1.1.1 Prevalence of Nodules

In almost all environments, the prevalence of nodules is the simplest, most acceptable, non-invasive and reasonably reliable method of REA. It involves determining the prevalence of nodules in a random sample of 30-50 adult males over 20 years of age, who have been resident in the community concerned for at least 10 years and who are engaged in rural occupations(1,2,3). Males are chosen, as they are generally more likely to be heavily infected than females and they are more amenable to examination by palpation. However, in some environments it may be desirable to include females or to enlarge the sample.

The method demands minimum training of personnel :

- to find and recognize nodules of *Onchocerca volvulus*;
- to examine all likely sites on the body (including iliac crests, greater trochanters, the knees, coccyx, rib cage, scapulae and head);
- to ask the patient whether he knows where he has a nodule; and
- to distinguish nodules from lymph nodes (enlarged or otherwise, and especially those in the groin), lipomata, sebaceous cysts, ganglia, etc.

With practice, specificity reaches about 95% and sensitivity is at least 50% - that is to say that the overall prevalence of onchocerciasis in the REA sample may be taken to be about twice the prevalence of nodule carriers therein.

The prevalence of onchocerciasis in all males and females in the community from which the REA sample came is then taken to be 75% of the overall prevalence in the REA sample. As a simple rule-of-thumb the percentage prevalence in the community is 5 times the number of nodule carriers in a 30-man REA sample or, alternatively, it may be expressed as 1.5 times the percentage of nodule carriers in the REA sample. For example, if 6 (20%)

out of 30 men in the sample had a palpable nodule, then the estimated prevalence of onchocerciasis in the community would be 30% (i.e., 5 x 6, or 1.5 x 20).

II.1.1.2 *Prevalence of "Leopard Skin"*

The prevalence of "leopard skin", particularly on the shins, is less specific (confusion can arise from the effects of previous trauma, yaws, vitiligo and leprosy) and, owing to the much lower prevalence of such lesions, this method is less sensitive. Nevertheless, the presence of "leopard skin" on the shins of passers-by is often a rapid and early means of detecting that onchocerciasis is endemic in a community.

II.1.1.3 *The Overall Blindness Rate*

Assessment of the overall blindness rate in communities is not generally a satisfactory method, except in the worst-affected areas. Without a thorough, expensive, skilled and time-consuming ophthalmic survey, estimates of blindness rates depend largely on hearsay figures obtained from community leaders. Moreover, with an overall baseline prevalence of non-onchocercal blindness of about 1% in rural tropical communities, it is only where blindness rates exceed 2-3%, and where the sample is large, that one can be reasonably certain of river blindness being the main cause of the increase.

II.1.1.4 *The Threshold of Prevalence for Active Mass Distribution*

In large-scale ivermectin distribution programmes, individual diagnosis and treatment is not a practical proposition. The more practical approach is to decide that, above a certain pre-selected threshold of endemicity, all persons in the community who are eligible to receive ivermectin (i.e., after applying the manufacturer's exclusion criteria) should receive large-scale treatment. In communities where the endemicity level is below the threshold, arrangements should be made for clinic-based treatment to be available at all suitable health centres in the area.

REA is a simplified rapid method of assessing the endemicity level of a community to allow the decision whether or not to carry out large-scale ivermectin treatment in the community.

The ideal threshold for large-scale treatment, to be aimed at under optimal conditions, is probably a 15% overall prevalence in the community. This level is roughly equivalent to 3 out of 30 persons (10%) in the REA sample harbouring a nodule. Below this level, infection is likely to be sporadic or, at worst, hypoendemic. As a very high proportion of serious onchocerciasis manifestations are found in communities with higher prevalence rates, it would appear to be more cost-effective to set threshold levels for large-scale distribution in communities relatively high at the onset of a distribution programme leaving out communities with lower prevalence to be treated later. However, in practice, the marginal cost involved in treating additional low prevalence neighbouring villages in a defined area is so low compared to treating only priority villages, that it would be more appropriate, at the starting of IDP programmes, to set priorities in terms of severity of onchocerciasis in areas rather than in communities. Thus high risk areas with a lot of high

prevalence communities should receive treatment first at the outset of a distribution campaign when funds will be limited, to be followed by medium risk areas, etc.

II.1.2 Rapid Epidemiological Mapping of Onchocerciasis (REMO)

When assessing the extent of potential endemic areas on a country-wide basis, the first step is to eliminate the urban centres of population, followed by those rural areas where endemicity can be excluded, e.g. swampy areas, high mountains, very dry or desert areas, and large game reserves or other such places where, for various reasons, there is almost no human population.

Where the remaining potentially or actually endemic area is extensive, a further problem arises in implementing REA. Rapid though the REA nodule method may be, under field conditions in rural areas that depend for their existence on subsistence and/or cash-crop farming, it is on average only feasible for one examination team to assemble and examine two communities per working day. Given the usual shortage of trained manpower, it may therefore take an unacceptably long time to cover every community in a large endemic area, even by means of REA. This is especially so when, as is desirable, the REA is to be followed soon after by the first round of treatment.

It is true that time and effort spent on REA are more economical in the long run than undertaking 10 or more years of active mass ivermectin treatment in communities where this is not necessary. Therefore to avoid the need for REA in every community, a method has been developed, termed Rapid Epidemiological Mapping of Onchocerciasis (REMO).

REMO is a new technique which relies basically on an understanding of the ecology and behaviour of the vector and the epidemiology of onchocerciasis. It enables the presence and severity of onchocerciasis in a large area to be rapidly determined by carrying out REA in selected indicator villages. The selection of indicator communities is best made by consensus among a team of three persons : an epidemiologist, an entomologist with experience of onchocerciasis, and a geographer. The country concerned is first divided into major bioclimatic zones, and further subdivisions of the potentially endemic areas are then made on the basis of river basins, after certain areas (as elaborated above) have been excluded from further consideration. A relatively small number of potentially "worst-case onchocerciasis" indicator communities (also known as high risk communities) are selected by a consensus of expert opinion, following very rigid selection criteria(6), at different levels up and down each river system or subsystem and at different distances away from each river, using 1 : 200 000 maps. Secondary communities are also selected at a distance of some 10 km from the high-risk communities for REA to give an idea of the distribution of infection.

All endemic countries must carry out REMO to determine the distribution and severity of onchocerciasis in the country to allow rational planning and cost-effective utilization of resources.

The concept of epidemiological mapping has been applied in the savanna countries of the Onchocerciasis Control Programme in West Africa, where there is an abundance of

epidemiological and entomological data and where overflying is easy, but the mapping technique has not been applied in the forest areas covered by that programme(4,5).

REMO has recently been tested with considerable success in forest and forest-savanna mosaic areas in Cameroon. The indicator communities were in a ratio of between 1 : 20 and 1 : 50 of the total communities in the areas surveyed, and in each of them REA was carried out. The results were encouraging and appeared to be reliably predictive of those communities needing active mass treatment in forest areas with diffuse heavy onchocerciasis. In woodland savanna and forest mosaic areas, where the concept of 1st-, 2nd- and 3rd-line villages held good at different distances from the main rivers, REM was also reliably predictive of 1st- and 2nd-line villages, but would need further fine tuning by additional REA surveys (on perhaps a 1 : 5 or 1 : 10 community basis) in order to determine the borderline of the area requiring active mass treatment. A manual giving guidelines for REM has recently been produced(6).

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PART II

SECTION 2

**GUIDE TO HUMAN RESOURCES DEVELOPMENT AND TRAINING FOR
IDPs**

Human resources development includes training, long-range planning for personnel needs, recruitment and selection of personnel, and personnel management policies (i.e., compensation, incentives, etc.). It encompasses all the people - technical and non-technical, high and low level - who have a role in the distribution of ivermectin.

Since most people involved in IDPs work in some type of institutional setting, e.g. ministries of health or nongovernmental organizations, human resources and institutions are highly interdependent. Therefore we need to consider carefully the performance levels of individuals working in these institutions as we proceed with the development of different kinds of human resources.

Despite a widespread understanding of the importance of training, the quality of instruction in most of those countries which have scarce resources is generally poor. Training techniques such as lectures or rote-oriented learning continue to be used, even though it is now widely recognized that the best results come from training which makes use of participatory, experiential methods.

Human resources development is an essential requisite for the success of every IDP. It should encompass both technical and administrative support personnel at all levels.

In participatory training, trainees are actively involved in the learning process. They share in the responsibility for learning, and are asked to relate what happens in a workshop to the situation in their own lives.

People learn best by doing, not by being taught in formal settings. This is especially true in the developing countries, where formal education is limited. Experiential learning responds directly to this tradition by placing a heavy emphasis on "doing". The experiential approach to learning does not offer prescriptions. The participants have as much to contribute as the trainers and therefore have a greater sense of ownership over what they learn. This chapter will emphasize these methods in relation to IDPs.

II.2.1 Developing training materials

Good training is not inexpensive and a significant commitment of time and resources is necessary. The cost of developing a training guide includes not only the initial draft but also pilot testing, revisions after each test, and final editing and production. Approximately 25 hours of materials preparation for each hour of instruction is a good rule of thumb. Thus, a training guide for a 30-hour workshop would take almost 95 days of effort. In addition, field tests can be quite costly. Unless resources are devoted to doing a careful needs assessment, field tests, and final editing and production, the final product is not

likely to be effective. It is also important that training materials be as concise and succinct as possible, be easy to use, contain visuals and handouts, and not be unnecessarily wordy or intimidating.

The best approach in preparing training materials is to combine the skills of a training specialist and a public health specialist (e.g. a physician or an epidemiologist). Most public health specialists cannot write training manuals. Rather, they end up producing a technical reference manual, which does not clearly lay down learning objectives, trainer instructions, or specific training activities. For these reasons, it is best to have the training specialist take the lead in writing/developing the training materials and act as a coordinator for the technical input.

II.2.2 Defining training needs

Training should cover not only professional public health or medical specialists and technical clinic nurses or field-based public health personnel, but also those handling accounting, budgeting, personnel, and procurement. Management and supervisory training are also often needed; and, at the community level, training needs include not just the community-based distributor (village health worker) but also the local committee responsible for the health care of its people.

II.2.3 Designing training programmes

Much donor-sponsored training consists of single-shot, *ad hoc* workshops which often have limited impact. Training is most successful when it is designed as a series of events building on each other or better still as a comprehensive training plan. This allows for continuity and permits trainers to sequence the materials carefully in each workshop and review what has been previously covered. The result of this approach is a core of well-prepared trainers.

II.2.4 Training issues and ideas

Most people involved in the development of onchocerciasis control programmes agree that the key factors leading to successful implementation are :

- mobilization of resources;
- public education; and
- training (including retraining).

Therefore, as IDPs are integrated into the existing primary health care systems, training activities are of primary importance. Effective teaching is essential to mobilize the support and active participation of health personnel as well as the public.

The following six training-specific topics will be covered as a foundation on which effective training can be based :

- (a) Training Prerequisites
- (b) Planning the Content of a Training Programme

- (c) Who to Train
- (d) Assessment of Training Needs
- (e) Curriculum Planning
 - Scheduling
 - Teaching techniques
 - Lesson plans
- (f) Materials Development
 - Visual aids
 - Village health worker reference manual

The outcome of the training depends on adequate preparation. It includes well-designed training curriculum as well as the use of well-developed training aids. Training tailored to the needs of trainees are most successful.

II.2.4.1 *Training Prerequisites*

(a) Understanding the context

Before implementing a training programme, it is of extreme importance to consider and explore the health care situation and the individuals who will be part of the programme.

The communities themselves where the people live

- What are their cultural beliefs?
- What are their priorities?
- How do they feel about utilizing health services?

The township/municipal/local government level

- How accessible is the town from the villages?
- What health care services are available in the township?
- What is the frequency of health outreach activities?

The district/provincial level

- What health services are available?
- Are there clinics for primary/secondary health services?
- What support can be offered at this level?

The national level

- What support can be offered or expected at this level?

The international level

- What support can be offered by organizations outside the country?

Before any training can take place, it is necessary to have the support services of qualified health professionals, who will be available to plan and implement the IDP in their

area of responsibility. In addition, all official approvals have to be obtained in order to ensure that the programme has the endorsement of the government and traditional systems.

(b) Ingredients of a successful programme

Effective training requires the following :

- Empathetic trainers who know and understand the trainees' working situation and their needs in providing health care services to the people.
- A training site, preferably away from the office of the trainers (or trainees), so that there will be few interruptions; and one that is comfortable for effective learning.
- Well-organized trainers, with essential materials prepared in advance and with the training site set up and ready for activities (audio-visual equipment, visual aids, written materials, etc.).
- Learner-centred activities that are designed to meet the level of understanding of the trainees, that will attract their interest and help motivate them to do something about the onchocerciasis problem in their community (e.g. role playing, field practical activities, group discussions).
- An atmosphere where trainees feel free to bring out their own ideas and contribute through active participation throughout the training programme.

(c) Integration of the IDP into the PHC system

Ivermectin distribution programmes are an integral part of the Primary Health Care system. As much as possible, IDP activities should be integrated into existing PHC activities. If a PHC training course is scheduled, it would be best to insert IDP training sessions into an appropriate time slot.

In addition, any information to be gathered would best be included on existing PHC forms (or, for the time being, be attached to these forms until the next printing). Only essential IDP information should be required of the health workers since, generally, they already have more than enough work to do as it is.

II.2.4.2 *Planning the Content of a Training Programme*

It is important to maintain an organized sense of direction when planning specific functions of the training programme. One should try to discover the best techniques and styles that will enable the health workers to attain the knowledge, attitudes, and skills needed to serve the health care needs of their community.

When deciding on what to teach and what not to teach, try to determine :

- what is **essential** to know
- what is **useful** to know
- what is **nice** to know

Aim your teaching at what is most essential.

Your main aim is to cover what is essential. Since time is limited, you need to aim carefully. Try not to spend too much time on what is less important.

Do not get too caught up in technical information and skills. Remember to include essential human and social aspects of IDPs (e.g. how this programme can prevent blindness and human suffering in countless individuals).

II.2.4.3 Who to Train

(a) Identifying trainees

Who are the best individuals to train in IDPs? Health professionals? Village health workers? School teachers? Religious field workers? Other community-based workers? Consideration needs to be given as to the effectiveness and willingness of those who might best provide IDP services to the people in need. Generally, health workers are best suited for this task but this may not be so in every place. Basic qualifications at the community level are that the workers shall be literate, shall reside in the community they will be serving, and shall be selected by the community. Some communities might not have literates. Programmes working in such communities may have to develop and provide "illiterate" record-keeping material.

Once the trainees have been selected, their present health knowledge and their attitudes and practices need to be carefully assessed in order to develop the training programme at the appropriate level. This activity will be the key to the success of the training exercise. If the activities are too difficult they will not understand and they will become frustrated and disinterested. Also, it is very important to consider what their current job responsibilities are and if it is even feasible to include yet another task.

II.2.4.4 Assessment of Training Needs

(a) Assessment results help determine needs

Ideally, the trainers should already know the trainees from previous primary health care and other training sessions. For IDP activities, the trainers may want to get to know about the trainees' feelings toward problems related to public health in their villages. It is often desirable to prompt them by asking a series of questions :

- What health problems have you seen in your community?
- Who tends to have these health problems? (Children? Adults?)
- Do these people ever come to you for health care services?

- If they come to you, what do you do for them? (Treat? Refer?)
- What do you need to learn in this training in order to be able to offer quality IDP services to your community?
- How would you suggest we best help you to acquire the knowledge, attitudes and skills in order for you to be able to provide IDP services?

(b) Pre-test - post-test

Pre-tests - post-tests are primarily used as monitoring tools to determine problem areas in the training that may need modification for improvement.

It is best to develop specific tests that are relevant to the situation in the country or area in which the training is being done. It is important that the trainers and trainees see this test as a means of improving the training activities and not as a trainee evaluation tool. Trainees should not feel nervous about having to memorize new terms. Rather, they should concentrate on learning what they can do for the onchocerciasis control needs of their community.

Pre-training questionnaires or tests may be sent to health workers prior to the training in order to provide information on subjects that need special attention.

II.2.4.5 Curriculum Planning

(a) Scheduling activities

Consider the following scheduling ideas concerning IDP training activities :

- Is there enough variety to keep the trainees interested (for example, classwork, field practice and community action)?
- Are related subjects scheduled in a sequential and logical order?
- Do more difficult subjects come early in the day and more fun subjects later (when people are tired)?
- Is all key subject matter included?
- Are high-priority subjects given more emphasis in the training course?
- Are skills and knowledge needed for immediate use and practice learned early (for example, community mobilization, disease overview, rapid assessment, treatment with ivermectin, management of side-effects, etc.)?
- How can study time and free time be best arranged to meet health workers' and instructors' needs?

- How can the schedule be kept open and flexible enough to allow for unplanned learning opportunities and special needs as they arise? (It may help to leave a 2- or 3-hour time block unscheduled to allow for review and for making up lessons that need additional learning.)
- How can the schedule be presented in a clear, simple form that can easily be seen and understood by trainees and trainers? Has the schedule of activities been communicated to participants?

(b) Teaching techniques

The following is a list of possible teaching techniques/activities that could be considered in IDP training workshops :

1. *Effective Questioning* (How? Why? When? Where? questions)
2. *IDP Basic Vocabulary* (Rapid assessment, nodules, etc.)
3. *Tests and Quizzes* (Checking knowledge and understanding)
4. *Group Discussions* (3-5 persons discussing specific topics)
5. *Group Work* (Assigned tasks in small groups)
6. *Demonstrations* (Showing how to perform a specific task)
7. *Assessments/Surveys* (Actually performing assessment)
8. *Projects* (Assigned major tasks for trainees)
9. *Assignments* (Assigned smaller tasks for individuals)
10. *Problem-Solving* (Take a problem situation and solve it)
11. *Brainstorming* (Thinking aloud and listing thoughts)
12. *Role-Playing* (Acting out an IDP activity)
13. *Drama* (Designing a short presentation)
14. *Art in IDPs* (Designing health education posters)
15. *Programmes* (A community programme about IDP)
16. *Puppet Shows* (Health education method for children)
17. *Songs and Poetry* (Using creative means of expression)

Some of the above activities could be quite time-consuming if not planned out and prepared well in advance of the training programme. It is **essential** to be **organized and prepared** in order for these activities to be successful. They should be tested out little by little during the training of different groups of health workers.

If the trainer is more comfortable using the lecture approach only, he should try building in effective questioning techniques and using visual aids to enhance each lesson.

These teaching techniques can also be applied to general health training activities in which trainers participate.

Appropriateness is the key consideration for the development of training activities. The trainers who tend to be the most effective are those who are able to develop activities that are **appropriate** for the education level of the health workers. The least effective trainers are those who are highly technical and use terms and language that the health workers do not understand.

Nevertheless, it is essential that a technical specialist be involved (especially in the beginning) in developing the training activities in order to make sure that what is being taught is correct. Although specialists may not be the best persons to teach the subject, it is very important that they give their assent to what is being taught and confirm that it is in line with proven IDP practices.

(c) Lesson plans

When teaching, it is easy to go into more detail than necessary and, in so doing, to lose sight of what is most important. Some form of selection is essential.

It will help, considerably, to develop lesson plans (especially in the beginning) to provide a guide that will keep the training on track.

The lesson plan must try to target on those topics that **are essential** for the health worker to know; **not** just what is **useful** to know or **nice** to know.

For each subject, each class, and each point that is taught it helps to ask oneself :

- **Why am I teaching this?**
- **Am I teaching to my objectives?**
- **Could this time be better used to teach something more important?**
- **Am I using the most appropriate method of teaching?**

II.2.4.6 *Materials Development*

(a) Teaching aids

A class in which we **take part in discussions** is more interesting than a class in which we just listen to a lecture.

A class in which we can **see for ourselves** what things look like and how they work is more interesting than a class in which we only talk about things.

A class in which we not only talk and see, but actually **do, make, and discover things** for ourselves, is exciting! When we learn by finding out things for ourselves, by building on experience we already have, we do not forget. What we learn through active discovery becomes a part of us.

Whenever possible :

1. **Make your own teaching aids**, using low-cost local materials.
2. When making teaching aids, **use and build on the skills which health workers already have**.
3. Try not to provide aids *for* health workers, but rather **involve them**, or members of the community, in making them.
4. Look for ways to **use real subjects** (blackflies, persons with nodules, etc.) instead of just drawing things.
5. Teach new ideas or skills by comparing them with familiar objects or activities.
6. **Make teaching aids as natural and life-like as possible**, especially when detail is important.
7. Use teaching aids that call for **doing** as well as **seeing** - aids that trainees must handle or put together.
8. Make teaching aids as fascinating or as much fun as possible.
9. Use teaching aids that do not merely show or explain something, but those that **help the trainees to think things through and discover solutions for themselves** - teaching aids that exercise the learners' powers of observation and reasoning.
10. **Use imagination**, and encourage trainees to use theirs. Turn the making and inventing of teaching aids into a challenge and an adventure.
11. **Keep teaching aids relatively simple**, so that when health workers return to their communities they can make their own and teach others.

If I hear it, I forget it. <i>(Lecture on nodules)</i>	If I see it, I remember it. <i>(Seeing a person with a nodule)</i>	If I do it, I know it. <i>(Palpating a nodule)</i>	If I discover it, I use it. <i>(Finding someone with a nodule)</i>
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(b) Reference materials for health workers

(i) IDP reference manual for health workers

One of the most valuable tools health workers can have is a clearly written, well-illustrated, easy-to-use manual. Ideally, it should be written for, or adapted to, the local area and its needs. If the health workers' training focuses on learning to use a practical manual effectively, they can accomplish far more than if they are expected to rely on their memories or class notes.

(ii) Posters, pamphlets, newsletters

It is important that the health workers receive materials which will help to keep them up to date on information pertaining to their work.

(c) Field-testing materials

Before selecting any teaching or reference materials, they should be tried out with the people who will be using them. Their responses to these questions should be obtained :

- Can you understand everything easily?
- Does it answer your questions and provide the information you need?
- Do you find it so interesting and informative that you want to read more of it?
- How could it be improved?

II.2.5 Conclusion on training

This manual cannot give all the specific details for developing every aspect of an IDP. What has been presented in this section is basic information that a programme planner may want to consider in the development of IDP training activities. The details will have to be worked out in each country based on local circumstances and experiences and will be modified and refined as the programmes progress. One should find out what is already available and look into how these materials might be modified and adopted. IDPs are young but there are already a handful of NGOs and national ministries which have developed approaches and materials that can be of value : individuals who have developed IDP curricula and materials will be eager to share them.

PART II

SECTION 3

**HEALTH EDUCATION METHODS IN IVERMECTIN DISTRIBUTION FOR
HEALTH WORKERS AT ALL LEVELS, COMMUNITY-BASED DISTRIBUTORS
AND BENEFICIARIES**

Although high user demand has resulted in ivermectin distribution being well accepted, uncertainty about the duration of programmes to control onchocerciasis demands measures to ensure that the intervention is initially effective and continues to be so. Health education may, therefore, be seen not merely as a means of promoting the initial acceptance of ivermectin, but also as indispensable to promoting continued compliance and ensuring the smooth integration of its distribution into the primary health care (PHC) system, thus providing sustainability.

II.3.1 Health education strategy

The design of health education strategy should enable an effective delivery of specific messages to target audiences with the view to getting ivermectin distribution institutionalized in order that it may sustain. Thus, the government, through the ministry of health will be made to recognize the need for control of onchocerciasis and accept to support ivermectin distribution. The beneficiaries

Health education must be carried out at the onset of IDPs to institutionalize ivermectin distribution to ensure compliance by the beneficiaries and sustainment by national authorities.

will be empowered to accept the responsibility for their own health thereby demanding regular annual ivermectin treatment. Target audiences for health education should include public officials and in particular, decision-makers and government officials in order to get their commitment to support long-term ivermectin distribution. However, a major effort needs to be directed towards the recipients of the drug, their community leaders, and the health workers responsible for its distribution.

II.3.2 Health education in village communities

Health education to the endemic communities must carry the following general messages and teach the people :

- (a) what onchocerciasis is;
- (b) how the infection and the disease come about;
- (c) how it can be combated using ivermectin;
- (d) the effect and side-effects of ivermectin and the necessity of taking the drug regularly at least once a year for a long time in order to achieve the desired effect.

For health education to come across and ensure that the behaviour and attitude of the population will change and be positive towards supporting the intervention, Knowledge, Attitude and Practice (KAP) surveys and focus group studies need to be carried out. Such studies enable the reasons for the behaviour of people to be discerned and thus allow the formulation of health messages in such a way as to be understandable and acceptable to the target population. The results of some such studies have shown that apart from cultural differences, attitudes also differ according to age, sex and even social status. The message of health education therefore has to address specific target groups, if the desired effect is to be achieved.

Health education at the village level should address first and foremost the community leaders. In addition to the general message stated above, it should stress the benefit of better health leading to increased productivity and improved welfare of the community as a result of ivermectin medication. Community leaders should be persuaded to organize the community to receive ivermectin regularly once a year.

Members of the older generation in endemic communities usually have the more severe forms of the disease. The message to them should emphasize the association between onchocerciasis and their skin changes and poor eyesight and the need to take ivermectin regularly once a year in order to prevent further deterioration.

KAP and focus group studies offer the means to develop specific health messages for target audiences.

The concern of the younger group is usually itching and unsightly eruptive skin lesions. Their message should therefore stress the importance of taking ivermectin regularly to relieve these signs and symptoms. Women appreciate the long-term improvement in the look of their skin that follows ivermectin, as well as the upsurge of general well-being. Their message needs to address these benefits whilst stressing the importance of regular treatment.

Simple posters or photographs should be prepared to depict such messages in a manner that can be easily understood by illiterates and which relates to onchocerciasis in the local environment. Health education should also be promoted as much as possible through the village school since children are the rising generation and they often pay more attention to what they learn in school than to what their parents tell them.

II.3.3 Health education training for Community-based Distributors

The torch-bearers of health education in many endemic communities are the Community-based Distributors (CBDs) of ivermectin. They must be taught and trained to carry across health messages from time to time, and in particular when the time approaches for the next distribution round in the community.

The CBDs should know the following facts in addition to those given above :

- The presence of microfilariae, tiny little worms in the skin and eyes, which cause itching and skin lesions, as well as eye lesions and blindness.
- The vector of onchocerciasis is the blackfly, which usually has a specific name in the local language and whose bites may infect a person.
- Ivermectin treatment in correct dosage has to be repeated at least once a year to prevent manifestations of onchocerciasis.
- Adverse reactions may occur during the first round of treatment but will reduce in intensity subsequently.

II.3.4 Health education training for health workers

Health workers also need training in order that they may be able to deliver health education effectively during their activities in implementing ivermectin distribution. Health workers may be supervisors or they may carry out the distribution themselves. They may be involved either in distributing the drug to the people in their villages or in giving it to patients attending a health clinic.

All health workers should know about onchocercal disease, its transmission and its treatment with ivermectin, including dosage, effects and side-effects which can occur, and their management. They should know in particular that the severity and frequency of occurrence of adverse reactions are much less than those which occur after diethylcarbamazine (DEC), a drug whose harmful effects the community may have experienced previously and which may have made them wary of ivermectin treatment. Health workers should be able to explain these facts in simple language to village communities during IDPs and also whenever they come into contact with endemic village communities during outreach services. They should stress to the endemic communities the importance of everyone taking ivermectin at least once a year without fail, except for those who are excluded, usually temporarily, under the exclusion criteria. Health workers should be made to understand the significance of their contribution in health education to the people in endemic communities. Trained health educationalists, when available, should be used to collaborate in educational sessions and to train other health workers who are constantly in close contact with endemic village communities.

Health providers need to be trained to deliver health education. CBDs, teachers, group leaders, etc., may also be trained to deliver health messages.

Clinic-based health workers should be trained to provide ivermectin treatment to attending patients. Their training should enable them to diagnose onchocerciasis, not only by laboratory means, but also on a presumptive basis from clinical symptoms and signs. They should follow up treatment with :

- (a) health education to the patients;
- (b) health messages for them to take back to their communities, asking neighbours with similar symptoms and signs to report for treatment, thereby expanding clinic coverage.

II.3.5 Channels for health education

All available channels should be used in order to get health education messages to the target population and use should be made of teachers, religious leaders, group leaders and any other influential personalities in the community. Person-to-person communication is most useful as this method provides opportunity for questions to be asked. Those questions that are most commonly asked should be recorded and the health educators should be prepared to give clear and correct standard answers to them.

Health education is delivered best by person-to-person communication. However all available channels should be used including public address on market days.

Whenever possible, illustrative posters or flip-charts should be used during health education campaigns. They should be easily understandable by illiterates and they should relate to the local conditions. They may be left hanging in public places and in schools to serve as a reminder of the message that has been conveyed.

Occasions which bring people together, such as market days, church services, or prayer time in the mosques, should be seized upon to present health education. Health messages may also be presented in traditional songs and dances and by play acting.

Radio and television may be used to convey health education messages but their effect may be limited since relatively few people in endemic rural communities are likely to have access to radio or television. Messages so passed should be in the vernacular in order to have an effect on the predominantly illiterate community. Local radio programmes are most suitable for delivering such messages.

One of the best channels for conducting health education is to establish a national onchocerciasis day or week with fanfare, messages and information being disseminated nationwide. This activity has the advantage of addressing all sections of people in the nation, including beneficiaries and health providers, and of mobilizing public opinion to support a worthy cause. Such action has the additional advantage of bringing the message to the attention of the more developed communities which, although not directly concerned with the problem, may be disposed to provide support for the IDP.

PART II

SECTION 4

PROCEDURES FOR IVERMECTIN DISTRIBUTION

II.4.1 Taking a census of the population

Before an active mass distribution of ivermectin can be undertaken, it is necessary to carry out a population census in the community concerned. The objectives of the census are :

- (a) to determine the size of the population for planning purposes;
- (b) to allow recognition of the same individuals during subsequent treatment rounds, thus ensuring proper coverage;
- (c) to account for the number of treatments given; and
- (d) to be able to provide a correct report on each round of treatment.

It is normal practice to take the household as the unit of count in the community.

II.4.1.1 Census Procedure

The health worker assigned to carry out census in a community must first introduce himself to the chief and his elders and explain his mission to the village. A community-based distributor can also be trained to carry out census. Depending on the lay-out of the community, it is often useful to make a rough sketch-map showing all the houses or compounds in it, and to assign a serial number to each of them.

This ensures that every household is covered and avoids unnecessary errors in enumeration. Alternatively, or additionally, serial numbers may be written directly on the houses or compounds. In some areas, household numbering may already exist from PHC or national census activities making this measure superfluous.

Census is a necessary information for planning and evaluation of IDPs. The needs of the IDP should determine the details of the data during census to be collected.

The health worker or the community-based distributor counts and records all the occupants of each numbered household in turn on the special form provided (see Appendix 1, Form 1, "Epidemiological Assessment Record"). The head of the household is requested to assist in the enumeration of his household members. The names, ages and genders of the members of the household are recorded serially, starting with the head of the household. The name of the householder's (first) wife is written down, followed by the names, ages and genders of her children. Next, as applicable, the same data are recorded for the second wife and her offspring, and so on. Thereafter the data for any other relations, and then any other tenants, in the household are recorded. Following this order ensures that everyone in

the household is recorded. Where identity cards are available, these are checked to ensure the accuracy of the data recorded. More often no such documents are available and the health worker should check that stated ages of the persons concerned are about right.

The same procedure is repeated in all the households of the community until the census is complete. It is important to make sure that names and details recorded are all those of persons normally resident in the community. Although strangers present in the village during ivermectin distribution should be treated, strictly speaking their records should not be added to those of the community for reporting purposes. Similarly, records of short-term visitors to households, who are normally resident elsewhere, should not be included in the community census.

The census of the community should be up-dated each year before the annual distribution of ivermectin. There may be new settlers in the community, additions to some households by birth or marriage, or losses due to migration or death. The specific questions allow for quick up-dating.

Detailed records of the population census are useful when it is intended to use the information for monitoring of programme activities and evaluation. Often it suffices to only count the number of people in the household, broken down into adults and children under 5 years and by gender.

II.4.2 Procedures involved in ivermectin distribution

Once the census is completed, the following steps need to be carried out whenever ivermectin is distributed :

II.4.2.1 *Exclusion of People Who are Not Eligible to Receive Ivermectin*

(a) Pregnant women should not be given ivermectin

Someone fluent in the local language needs to ask women of child-bearing age "Is it possible that you are pregnant?" Some effort should be made to allow women to answer this question confidentially. If possible, a woman should ask the question. It is not necessary to ask a woman about the timing of her last menstrual period.

Persons in communities which qualify for large-scale ivermectin treatment must receive the correct dose of ivermectin. Persons excluded from treatment must be told when and where they can go to get the drug.

(b) Mothers breast-feeding babies who are less than one week old should not be given ivermectin

It is the recommendation from the Mectizan® Expert Committee to protect newly born infants since a small amount of ivermectin is excreted in breast milk and may cross the incompletely developed blood-brain barrier in the first days of life and have serious adverse effects.

(c) Small children should not be given ivermectin

Children weighing less than 15 kg or under 90 cm in height should not take the drug. There is no evidence that the drug is harmful to small children. However, there is no convenient way to give a proper dose to small children since they would require less than 3 mg, that is, less than one-half of a standard 6 mg tablet. Parents are frequently mistaken about a child's age. If a parent says that a child is less than 5 years old, but the child weighs more than 15 kg or is over 90 cm in height, the child should still be treated with ivermectin.

(d) People who are severely ill should not take ivermectin

"Severe illness" includes severe wasting of the body, high fever, possible meningitis, and conditions that make a person unable to walk. If someone is already quite ill, a reaction to ivermectin could make that person worse. If a person who is already sick becomes worse after taking ivermectin, this could lead to rumours that the drug is unsafe.

It will be quite obvious if a person is severely ill. It is not necessary to perform even the simplest of physical examinations before giving a person ivermectin. If the person can walk normally and does not appear ill, then he/she is fit enough to be given the drug.

However, it is unwise to distribute ivermectin in a community at a time when there is an outbreak of either cerebrospinal meningitis or sleeping sickness as these infections may temporarily weaken the blood-brain barrier.

In summary, aside from weighing or measuring height and a quick visual check to see that the person is able to walk and is not obviously sick, the screening of potential ivermectin recipients involves asking only two questions of women of childbearing age :

- (a) Is it possible that you are pregnant?
- (b) Have you delivered a baby within the last week?

People who are excluded from taking ivermectin based on the above two criteria should be instructed when and where to go to get the drug at a later date.

II.4.2.2 *Selection of Dose*

The Mectizan® Expert Committee has recommended to Merck & Co. Inc. that the dose of ivermectin should be based upon the person's weight, but that height may be used as a surrogate for weight when assessing dosage.

The recommended dose of ivermectin is at present as found in Table 4. Simple (but sturdy) "bathroom" scales are adequate for weighing persons. Alternatively a tape-measure or a stick with clearly marked measurements can be used to assess height.

II.4.2.3 *Dispensing Medication*

Eligible persons receive from one-half to two 6 mg tablets of ivermectin. Each person should swallow the tablet(s) in the presence of the drug dispenser. *No one* should be permitted to take the drug away without swallowing it.

II.4.2.4 *Final Instructions*

A worker who is fluent in the vernacular should explain the following to each drug recipient :

- (a) "You should take ivermectin again in one year."
- (b) "If you have any problems in the next few days, then you should contact a local health worker."

A community resident is the ideal person to give this message.

II.4.2.5 *Record-Keeping*

The minimum information needed by managers and evaluators is a record of the number of people treated and the number of tablets dispensed in each community. It is usually *not* necessary to record the name and other information about each person treated unless programme managers want later to perform spot checks to verify who was treated.

Table 1

DOSAGE OF IVERMECTIN

DOSAGE :

Body weight in kg	Height in cm	No. of tablets
15-24	90-119	½
25-44	120-140	1
45-64	141-158	1½
≥65	≥159	2

EXCLUSION CRITERIA :

- Children aged under 5 years
or weight < 15 kg
or height < 90 cm
- Lactating mothers of infants < 1 week old
- Pregnant women
- Severely ill persons

PART II

SECTION 5

REACTIONS TO TREATMENT WITH IVERMECTIN, THEIR CONTROL AND REPORTING REQUIREMENTS

II.5.1 Safety of ivermectin

Ivermectin is the drug of choice for the treatment and control of onchocerciasis. Pre-registration studies (Phases I-III) led to the adoption of an annual dose of 150 mcg/kg as being the most appropriate for safe and effective reduction of the microfilarial load. Since the drug is to be given to large populations in rural areas of developing countries - "to the village at the end of the road" - additional studies (Phase IV) were conducted by several research teams in different parts of the endemic area in order to determine the safety and acceptance of community-based distribution, and to detect rare side-effects.

All studies reached the same conclusion : ivermectin is a safe drug. Community-based distribution of ivermectin is now the strategy of first choice for controlling onchocerciasis.

Over the past seven years, nearly 5 million people have received ivermectin. The drug has been proven over and over again to be safe and well accepted by the populations in need of treatment.

II.5.2 Side-effects of ivermectin, and mild or moderate reactions to treatment

However, safety does not exclude side-effects. Some people will experience adverse reactions after taking ivermectin, but among populations which have had previous experience of treatment with diethylcarbamazine (DEC), ivermectin is considered to be almost innocuous. Most reactions are of the Mazzotti type and they are usually mild. They result from the massive killing of microfilariae, and may include : pruritus, papular rash and oedema of the skin, conjunctivitis, headache, fever, vomiting, diarrhoea, swelling of lymph nodes, arthralgia and myalgia, weakness and postural hypotension. Persons who are free from infection with filarial parasites will in general have no reaction to the drug, or they may experience "beneficial side-effects", such as the expulsion of intestinal worms.

The frequency and intensity of adverse reactions vary with the intensity of infection with *Onchocerca volvulus* in the population, but normally less than 5 percent of the treated population will complain. Most reactions occur during the first three days after treatment and will resolve spontaneously. With subsequent treatments, as microfilarial loads decrease, so will the number and intensity of reactions, becoming as rare as five per thousand. Annual re-treatment of those persons who experienced moderate reactions

Ivermectin is safe. However arrangements should be made to deal promptly and effectively with a small number of highly infected persons who may have moderate to severe adverse reactions after a large-scale distribution.

after their initial dose does not usually produce further reaction. This supports the belief that reactions are not idiosyncratic but are related to the death of microfilariae.

The perception and acceptance of adverse reactions will also vary with the population. Well-informed populations will gladly accept mild adverse reactions and consider them as proof of the power of the medicine. Thus dealing with adverse reactions starts before the first administration of the drug. Not only does the population need to be informed, but also the medical team in charge of the area to be treated must be well trained on the subject of side-effects and adverse reactions.

Mild or moderate reactions should be dealt with differently from severe reactions. The former, defined as those which do not cause interruption of daily activities, need not be reported, and it is suggested that they should be treated through the "existing" health structure. They can generally be treated with simple preparations from the "essential drugs list", such as aspirin or paracetamol, oral rehydration salts and/or an antihistamine.

II.5.3 Severe and "unexpected" reactions to treatment with ivermectin

The definition of a severe reaction includes any life-threatening condition, any reaction requiring hospitalization, or any causing permanent or severe incapacity or death. Severe or "unexpected" reactions following ivermectin treatment need to be reported to :

Dr Philippe GAXOTTE
Merck, Sharp and Dohme - Interpharma
106 Avenue Jean-Moulin
78170 La Celle St Cloud
France

(FAX : 33-1-30-82-06-35; PHONE : 33-1-30-82-10-37)

It should also be borne in mind that, where large numbers of people are being treated, it is inevitable that an occasional person will die of natural or other unrelated causes during the days immediately following ingestion of ivermectin. For example, in a population of 18 000 with a crude death rate of 20 per 1000 per annum, we can expect someone to die every day. There should, therefore, be good clinical grounds on which to associate a death with the ingestion of ivermectin but, when such occurs, every effort should be made to follow up the case with an accurate history and, whenever possible, if there is a suspected causal connection with ivermectin, a post-mortem examination should be done.

Severe reactions to ivermectin are very rare, probably less than one in 10 000 persons treated. Those so far encountered have been severe postural hypotension and attacks of asthma. It is virtually impossible to prepare village health workers to deal with the expected or unexpected severe reactions. What needs to be set up is rather a system of reporting and referral to trained medical aid within a delay of no more than 24 hours.

It is also to be encouraged that reports of severe reactions be related to the denominator of the number of persons having taken the drug, so that better estimates of the incidence of severe reactions can be made.

PART II

SECTION 6

RECORD-KEEPING AND REPORTING FOR IDPs

II.6.1 The importance of record-keeping

Record-keeping is tedious and time-consuming. Workers sometimes resent the time they must spend filling out forms. If the record-keeping burden is too great or the workers are not trained, supervised and encouraged properly, they will do a poor job of keeping records. The result will be that the records will be incomplete, inaccurate and misleading.

There are three major reasons why any public health programme needs to keep good records. First, certain information (e.g. an inventory of drugs remaining, or the time it takes to travel between certain villages) is needed for planning and resupply purposes. Second, certain records (e.g. a log for recording movements of a vehicle) are useful to supervise workers and their use of resources. Finally, certain statistics (e.g. the number of people treated with ivermectin each year) measure the important outputs of a programme and are needed for external use. Thus, a good record-keeping system is essential for **planning, for supervision and for programme evaluation.**

The design of a record-keeping system should streamline the information which is gathered. The records should be kept as brief and concise as possible. Information should not be collected unless it will be used. In the event that health workers may already be keeping records for other health programmes, it is best to use these record forms to collect information for the IDP. This will help promote *integration* of ivermectin distribution into the primary health care system and reduce the time required to train and supervise workers and to complete records.

It is important that the people who complete the records know how the information they collect will be used. Data should be transferred both UPWARD to project managers and DOWNWARD to field staff, who should receive verbal or written reports which summarize the data they have collected. Once the information's usefulness is demonstrated, the people who complete reports will be more convinced of the importance of providing accurate data. Ideally, these same people should use the information themselves to monitor their performance and compare it with the performance of other workers.

Record-keeping is an essential activity of every IDP. Field staff must therefore be properly trained to collect data correctly. Keeping field staff informed on the summary of the data they have collected serves a good encouragement.

Field staff must be carefully trained if they are to complete record forms accurately. Training must include field exercises during which staff practise completing the forms. During these exercises, it may become apparent that staff have difficulty completing

certain items. If this is the case, the programme planners should consider redesigning one or more forms. The record-keeping system should be flexible enough to allow for improvements and modifications as the needs of the programme and the users evolve.

II.6.2 A model set of records for an ivermectin distribution programme

Included in Appendix 1 are examples of forms which may be used as record-keeping systems for reporting on field activities commonly conducted by ivermectin distribution programmes :

1. *Epidemiological Assessment* (Form 1)
2. *Health education* (Form 2)
3. *Ivermectin distribution* :
 - (a) Clinic-based distribution (Form 3*)
 - (b) Mobile team distribution (Form 4*)
 - (c) Community-based distribution (Form 5)
4. *Treatment of side-effects of ivermectin* :
 - (a) Treatment of mild adverse reactions by non-professionals (Form 6)
 - (b) Treatment of serious adverse reactions by professionals (Form 7)
5. *Supervision of the above activities*
 - (a) Supervision of health professionals (Form 8)
 - (b) Supervision of CBDs (Form 9*)
 - (c) Ivermectin distribution tally record (Form 10)
 - (d) Inventory of drugs and other consumables (Form 11)
 - (e) Monthly Field Summary (Form 12)

* N.B. : Form 10 should also be completed for clinic-based and mobile team distribution.

These forms have purposefully been typeset with a standard typewriter font to demonstrate how they can be prepared with an ordinary typewriter and ruler.

II.6.3 Assessment of record needs

Most programmes will need only a subset of these forms (or forms collecting equivalent information). For example, programmes which do not work with CBDs will not need to keep records equivalent to forms 5, 6 or 9. In addition to the above forms, any worker driving a vehicle or motorcycle should complete a log (Form 13); and any worker disbursing money should keep accounts and fill out vouchers and receipts.

The physical design of record forms is important. They must be clear, uncluttered and quick to use. If a form is confusing or tedious to fill in, staff may not be willing to

complete it or they may provide inaccurate information. Non-literate CBDs may need forms with pictures and few words.

It may not be readily apparent why certain questions have been included on the forms. Everyone appreciates the need to keep count of the number of people receiving ivermectin (Form 10). It is more difficult to understand the reasons for collecting the names of the people checked for nodules (Form 1) or receiving ivermectin (Forms 3, 4, 5) or the date and time of a health education session (Form 2). Such data appear to be extraneous when, in fact, they enable the supervisor to monitor the work performed and to confirm the accuracy of records by later spot checking in a small sample of communities. If managers do not intend to do such spot checking, or if a programme is so small that it is possible for managers to be present during each field activity, then there is no point in recording such information.

II.6.4 A model set of annual reporting forms for an IDP

Included in Appendix 2 is a set of annual reporting forms used by the NGDO Coordination Group for Ivermectin Distribution.

The first set of forms covers ivermectin distribution and the second covers costing.

PART II

SECTION 7

SUPERVISION AND MONITORING OF IDPs

Supervision involves overseeing the work of others. Supervisors **monitor and evaluate work, motivate workers, and provide training and supplies.**

Supervision of community-based distributors (CBDs) is particularly important because of their limited training and experience and because they usually work in isolation and have little contact with the rest of the programme. Furthermore, remuneration for their work is often minimal or sporadic. Thus, it is especially important that supervisors take advantage of each encounter with CBDs to train them and motivate them.

II.7.1 The supervisory system

It is important to build a formal system of supervision into a programme. One way to do this is to use supervisory checklists. Form 9 in Appendix 1 is an example of a checklist used for supervising a Community-Based Distributor. The instructions for the form say that "After a CBD has finished distributing ivermectin, the supervisor should visit the community one final time to do the following tasks :

1. *If applicable, collect the weighing scale or tape measure.*
2. *Collect the remaining ivermectin.*
3. *Collect the Household Ivermectin Treatment Records.*
4. *Use the Ivermectin Distribution Tally Record to add up the treatments recorded on the Household Distribution Treatment Records.*
5. *Collect the Records of Reactions to Ivermectin.*
6. *Interview the head of the community and ask these questions :*
 - (a) *'Is there anyone in the community who is not satisfied with the conduct of the distribution?'*
 - (b) *'Are there some people in the community who did not receive the ivermectin?'*
 - (c) *'Are there some people in the community who had a bad reaction after taking the ivermectin?'*
7. *Pick at random five Household Ivermectin Treatment Records. Ask the CBD to help you find the houses which correspond to each of these five household records. Visit the five houses to interview the residents. Do you detect any major discrepancy between what is written on the household records and what the*

residents of the house tell you? Is there anyone who is not satisfied with the work done by the CBD? Is there anyone here who will refuse to take the drug again? In each house ask 'Which disease will this drug treat?' In each house ask 'When should you take the drug again?'"

One advantage of using supervisory checklists is that they provide standard measures for judging performance and they help make it clear to the workers what is expected of them. Such checklists can be misused, however. If supervisors limit their monitoring to the items included on checklists alone, they may fail to address the particular needs of the workers.

Ideally the supervisor should be a supportive problem-solver rather than a critical disciplinarian. It is as important to recognize good work as it is to notice and correct an inadequate or flawed performance. When meeting with staff the supervisor should encourage open discussion. The workers will feel more comfortable sharing their problems and concerns if they are confident that they will not be punished for raising them.

Other record forms included in Appendix 1 are completed not by the supervisor but rather by the worker who is being supervised. These forms monitor such things as distribution of ivermectin (Forms 3 to 5), treatment of side-effects of ivermectin (Forms 6 and 7), vehicle use (Form 13), inventory of supplies (Form 11) and health education activities (Form 2).

Direct supervision of most field work is not practical. Without an adequate record-keeping system it is difficult, if not impossible, for a supervisor who is not on site to verify and encourage superior productivity and to identify and correct substandard performance. The supervisor has the responsibility to review workers' records, identify mistakes and, in some cases, verify the accuracy of the field records through spot checking. Form 11 in Appendix 1 is an example of a checklist used to verify the accuracy of records completed by health professionals. It suggests that the supervisor visit a random sample of 5-10% of all communities where field work has been carried out. This includes communities where epidemiological assessment or health education activities were carried out, as well as communities receiving ivermectin. While visiting, the supervisor can speak with the head of the community and other residents of the community to determine whether there are any complaints. The supervisor can bring along relevant records of field work performed in the community and ask questions to determine whether these records were completed accurately.

Supervisors should not limit their supervision to items on their checklists only. They may be viewed as a policeman. Supervisors must address the particular needs of the workers. Good work needs to be recognized just as importantly as poor work needs to be noticed and corrected.

A record-keeping system allows the supervisor to verify the accuracy of activities carried out by field workers. The supervisor can correct mistakes and encourage superior productivity.

II.7.2 Feedback and problem-solving

As noted in the section on record-keeping, it is important that workers receive feedback on the forms they complete. It is best if these forms can be reviewed on-site at the time that they are collected. Workers will then be persuaded of the importance of record-keeping, and can be made aware of the results. Problems can be promptly identified, the worker can correct mistakes and the supervisor can request any necessary changes in record-keeping procedures.

PART III

**EVALUATION AND COST-EFFECTIVENESS OF IVERMECTIN DISTRIBUTION
PROGRAMMES (IDPs)**

PART III

SECTION 1

EVALUATION OF IDPs

Evaluation is a process that **measures progress** toward programme objectives and **suggests improvements** needed to meet those objectives. Sponsors and other outside agencies need evaluations to make decisions about funding and about replicating programmes. Programme managers and staff need evaluations to collect information for planning, to monitor programme activities and to learn how a programme can be improved.

III.1.1 Types of evaluation

External evaluation : This type of evaluation, also called an "**effectiveness evaluation**",⁴ is typically requested by a programme's sponsors at the middle or end of a funding cycle. External evaluations are designed and organized by external evaluators (i.e., outside consultants rather than regular staff of the programme) in collaboration with the programme's sponsors. Such evaluations usually aim to assess whether the programme has produced certain outcomes. There are advantages to using an impartial and expert external evaluator. However, external evaluators sometimes fail to collaborate with and involve regular programme staff in the design and conduct of the evaluation. External evaluators are sometimes perceived as playing the role of a policeman.

For evaluation to be most effective it should be integrated into the structure of a programme and be conducted regularly and at many levels. This may include self-evaluation by field workers, day-to-day monitoring of field activities by managers, internal evaluation staff meetings after distribution is completed in each district, and external evaluations assessing the programme as a whole.

Internal evaluation : An internal evaluation (also called "**participatory evaluation**"⁵) is typically requested by the creators and organizers of an on-going programme and is designed and organized in close collaboration with the regular staff of the programme. Internal evaluations usually aim to determine how a programme can be upgraded and refined. They provide information about how well the programme has been implemented and why it has succeeded in some respects and fallen short of targets in other ways. This

⁴ From Fink A. & Kosekoff J. *An Evaluation Primer*. Sage Publications, New York, 1978.

⁵ Feuerstein M.-T. *Partners in Evaluation : Evaluating Development and Community Programmes with Participants*. Macmillan Publishers, London, 1986.

information is so useful to programme managers that this type of evaluation is also sometimes called an "improvement evaluation".⁶

III.1.2 Indicators for assessing ivermectin distribution programmes

An indicator is a measure of progress toward an objective. For example, an IDP might have as an objective of its health education activities to increase knowledge of ivermectin in endemic communities. One indicator of this objective would be the percentage of adults who, when surveyed, could state one correct benefit of the drug.

Table 2 outlines the most important indicators used to assess IDPs. These indicators are divided into **measures of impact, measures of output and measures of management.**

III.1.2.1 *Impact Indicators*

Impact indicators measure progress toward the ultimate objective(s) of the IDP. For most programmes in Africa this ultimate objective is the prevention of blindness or other severe onchocercal morbidity. For some programmes it may be possible, after several years, to document a decline in the prevalence of blindness in communities where 5% or more of the population have previously been blinded by onchocerciasis. However, for most communities and most programmes, it will probably take many years before a significant reduction in the prevalence of blindness can be documented.

Most IDPs have so far shied at attempting to measure the impact on the progress towards their objectives, viz., to prevent onchocercal blindness and skin disease because of related problems. These include difficulty in the measure of changes in low blindness rates in most communities and problems related to the use of skin snip which is also not appreciated by the people.

For most programmes the impact will have to be measured indirectly by measuring the effectiveness of ivermectin in reducing first the microfilarial loads and, much later, the prevalence. For this purpose the Community Microfilarial Load (CMFL) is the best indicator. This is an average⁷ of the number of microfilariae per milligram of skin snip for all the people in a community aged 20 years and over. The CMFL is a much more sensitive indicator of the effect of ivermectin in the early years of distribution than is the prevalence of microfilariae.

Some programmes may have as an objective to control the transmission of onchocerciasis. For this purpose, a simple indicator is the incidence of new onchocercal

⁶ Fink A. & Kosekoff J. *Op cit.*

⁷ The CMFL is actually a geometric average obtained through a $\log(x + 1)$ transformation.

infections in some groups of people not receiving ivermectin. The best group to monitor for this purpose is the children who qualify to take their first dose of ivermectin.

There are several problems with measuring any of the impact indicators discussed above. First there is the problem of representativeness. Secondly, a baseline measurement is needed with which to compare the result of any impact indicator. Except, perhaps, for examinations of each year's new intake of 5-year-old children (or those weighing 15 kg or measuring 90 cm), it would be too time-consuming to collect such baseline data on every community receiving ivermectin. Thus, impact indicators can only be monitored on a limited number of sentinel communities. These sentinel communities, even if randomly selected originally, may receive preferential treatment by staff who are aware that the sentinel communities are being used to evaluate the programme. Thus, the results from sentinel communities may not be representative of the results for other communities targeted by the programme. A possible way round these difficulties may be to select, each year and at random, a number of different villages whose baseline endemicity level may be assumed from the results of a rapid epidemiological assessment carried out before the first round of treatment.

There are additional problems with any indicator that requires skin snipping. People are reluctant to be skin snipped and there is some risk, if the equipment is not sterilized properly, that skin snip instruments can transmit hepatitis or HIV. These problems can be overcome by offering an incentive to people who consent to snipping, minimizing the frequency of snipping (e.g. once every three years), snipping different people each time (as is the case when snipping children weighing less than 15 kg) and carefully training and supervising the skin snip technicians to be courteous and to disinfect the instruments after each snip.

For the reasons discussed above, most of the IDPs now operating have not yet attempted to measure their impact directly. Instead most programmes use the coverage achieved with ivermectin distribution as an indirect indicator of programme impact. Strictly speaking, ivermectin distribution is an output rather than an impact of a programme. But this is an appropriate compromise if the statistics on ivermectin distribution are credible and if the data are broken down according to the baseline endemicity of the communities treated, i.e., the number treated in hyperendemic communities, mesoendemic communities and so forth. A person living in a hypoendemic community is most unlikely to go blind from onchocerciasis, even if not treated. Thus, the impact of treating a person in a hypoendemic community is much less than that of treating a person living in a hyperendemic community.

III.1.2.2 *Output Indicators*

Output indicators measure the important outputs of an ivermectin distribution programme. These include training of staff, health education, epidemiological assessment, ivermectin distribution and management of reactions to the drug.

One type of indicator is the absolute number of staff/people/communities reached with these outputs. Another type of indicator, coverage, is the percentage of the total population reached with these outputs. For example, if the programme distributed ivermectin to 3000 people in a group of villages with a total population of 4000, then the coverage was 75%. As another example, if health education meetings were planned for 40

villages but took place in only 12 then the coverage was 30%.

In those programmes where a geographical target was set, another type of indicator is the percentage of the target which was achieved. For example, if the programme had as an objective to train CBDs for 100 communities and CBDs were actually trained for 125 communities then it exceeded its target by 25%.

For evaluation of the second and subsequent rounds of distribution another type of indicator is the percentage change from the previous year. For example, if the coverage was 75% during the first round of distribution but only 60% during the second round, then coverage fell by 15% of the total population or 20% (15/75) of the previous year's coverage.

It is important to assess both the quantity and the quality of programme outputs. For example, the evaluation should consider not only the coverage achieved by health education efforts but the effectiveness of these efforts as measured through KAP surveys and focus group investigations.

III.1.2.3 *Management Indicators*

Management indicators are used to assess the quality of programme planning and administration. Most of the lessons learned from an evaluation come from careful assessment of management indicators. The indicators listed in Table 2 should be self-explanatory.

Output indicators measure important outputs of IDPs, viz., training, health education, ivermectin distribution and management of adverse reaction to drug, etc. It is important to assess not only the quantity but also the quality of the programme outputs.

Table 2

**INDICATORS FOR EVALUATING IVERMECTIN DISTRIBUTION
PROGRAMMES**

1. Measures of Impact

- (a) Prevention of blindness and other severe morbidity
- Prevalence of blindness in sentinel communities
 - CMFL in sentinel communities
 - Coverage with ivermectin (data stratified by baseline endemicity of communities)
- (b) Control of transmission
- Incidence in children in sentinel communities, who attain the weight of 15 kg or the height of 90 cm, and who are presenting for their first dose of ivermectin

2. Measures of Output

- (a) Training of health professionals and CBDs
- (i) Quantity^a
- trainers
 - staff trained
 - communities/clinics/districts with enough staff trained
- (ii) Quality
- knowledge of staff as assessed through tests and records
- (b) Information/Education/Communication
- (i) Quantity
- mass education meetings, posters, broadcasts, etc...
 - people/communities reached
- (ii) Quality
- knowledge, attitudes and practice as assessed through surveys, focus-groups and other qualitative methods
 - Are there any rumours circulating about the advantages or disadvantages of ivermectin or of the programme in general?

^a See text for a discussion of various quantitative indicators.

(c) Epidemiological assessment

- (i) Quantity
 - communities assessed
- (ii) Quality
 - validation of results through spot checking
 - is distribution being delayed because of the slow pace of epidemiological assessment?
 - if skin snipping is performed, do workers adequately disinfect the scleral punch with a flame or glutaraldehyde?

(d) Ivermectin distribution

- (i) Quantity
 - persons/communities treated (see text for explanation)
- (ii) Quality
 - incorrect dosing
 - inappropriate treatment (pregnant, sick, < 15 kg, etc...)
 - missing ivermectin
 - inaccurate, incomplete, messy or fraudulent record-keeping as assessed through review of records and spot checking

(e) Management of serious reactions

- Incomplete investigation/incomplete reporting
- Inappropriate medical management

3. Measures of Management

(a) Planning and decision-making

- Are the goals of the programme well defined?
- Is there a detailed implementation plan for the current year including a budget and a time-table?
- Are short-term plans prepared?
- Have most activities been carried out according to plan and on schedule?
- Do partner agencies (e.g. government, local NGOs) actively participate in planning and decision-making?
- Do junior staff contribute to planning and decision-making?

(b) Record-keeping, supervision and monitoring

- Does management communicate well and have a supportive relationship with staff?
- Have record forms been adequately designed?
- Are record forms completed adequately?
- Do field staff receive "feedback" reports on the records they submit?
- Are distribution and consumption of supplies adequately monitored?
- Is use of the vehicle and motorcycles adequately controlled and monitored?
- Is there an accountant and are accounts kept properly?

- Are thorough audits performed at least once a year?
- Is there any evidence that field workers or office staff have embezzled funds or stolen supplies or equipment?

(c) Progress toward sustainability

- (i) Political will of host government
 - political will as shown in policy statements and apparent commitment of high-level officials
 - official action assigning personnel, funds, vehicles to programme
- (ii) Long-term planning
 - is there a long-term plan for sustaining the financing and the management of the programme?
- (iii) Progress toward financial sustainability
 - if programme sponsors cannot continue their current level of commitment for at least another five years, what percentage of running costs is now paid for by host governments or fees?
- (iv) Progress toward integration
 - to what extent has ivermectin distribution been integrated with other health service programmes?
 - does management communicate well and have a supportive relationship with staff?

PART III

SECTION 2

ASSESSING THE COST-EFFECTIVENESS OF IDPs

Donors, planners and managers must study the costs of a programme in order to determine the amount of funding required to keep it running or to expand or replicate it. If cost data can be related to information on programme impact, such as the number of cases of blindness prevented, then it is possible to assess programme efficiency.

Analysis of cost-effectiveness helps in the planning and implementation of IDPs and should be included in routine programme evaluation.

Properly conducted cost-effectiveness studies should permit planners to : (a) select between alternative distribution strategies, i.e., fixed-centre *versus* mobile team *versus* community-based distributor; (b) assess the efficiency of different implementing agencies; and to this end there are obvious advantages to be gained from the use of uniform budget reporting forms and procedures by all components of any regional IDP.

However, cost-effectiveness analysis is not as simple to perform as it may appear. Recent cost analyses of IDPs have suggested that the cost per year per person treated with ivermectin may be as low as US\$ 0.10 or as high as US\$ 5.00. An overly simplistic or incomplete accounting of programme costs and outputs is more likely to mislead than to enlighten.

A cost-effective programme is one which delivers a given output at lower cost than alternative programmes. Cost-effectiveness analysis inherently involves a comparison. The comparison is fair and enlightening only if the outputs of the competing programmes are comparable and the methods used to calculate costs are adequate and consistent.

III.2.1 Problems with measuring programme effectiveness

For most IDPs in Africa the ultimate objective is the prevention of blindness or other severe morbidity from onchocerciasis. Ideally, therefore, cost-effectiveness analyses would determine such parameters as the cost per case of blindness prevented or the cost per case of "hanging groin" prevented. However, very few programmes have ever attempted to estimate their effectiveness at preventing blindness. Instead, the number of people treated with ivermectin is frequently cited as the best evidence of programme effectiveness. However, the total number of people treated with ivermectin is a poor indicator of the impact of an IDP.

Research conducted by the Onchocerciasis Control Programme in West Africa (OCP) has shown that in the setting of the West African savanna, communities do not face a

significant risk of onchocercal blindness unless at least 40% of the population are infected.^{9,10} A person living in a hypoendemic community is therefore quite unlikely to go blind from onchocerciasis, even if not treated. Thus, the impact from treating a person in a hyperendemic community is much greater than the impact of treating a person living in a hypoendemic community. Since the only indicator of disease severity which most programmes can routinely collect is the prevalence of infection, IDPs should be requested to provide statistics on the number of people treated from communities with prevalence in various ranges (e.g. $\geq 60\%$, 40% to 59%, 20% to 39%, less than 20%).

When assessing programme effectiveness, comparison of programmes, which serve communities that differ widely in location and endemicity should be avoided.

Population density is also an important factor in the consideration of programme effectiveness. Under the condition of an exposure to a similar vector fly population, people who live in tiny and remote villages, where there are less than 35 inhabitants per square km of utilized land, will be much more heavily infected and at greater risk of blindness than people living in a more densely populated community or a town.¹¹ Moreover, the costs per person treated are higher for the more remote communities. Therefore, a programme operating in a sparsely populated area should probably not be compared to a programme operating in a densely settled area. For similar reasons a programme operating in a forest area where onchocerciasis rarely blinds should not be compared to a programme operating in a savanna area where there is much blindness.

III.2.2 Problems with measuring programme costs

Cost-effectiveness comparisons are misleading unless they are based upon explicit accounting rules that are applied consistently. Programme costs can be categorized into start-up and running costs.

⁹ Remme J. *et al.* Ocular onchocerciasis and intensity of infection in the community. *Trop. Med. Parasit.*, 40(1989), 340-354. In many forested areas, in contrast to savanna areas, onchocerciasis is significantly less likely to cause blindness even in the most heavily infected communities. However, other severe morbidity such as lymphatic obstruction may occur in hyperendemic forest communities. There are no data to suggest that the risk of severe non-ocular morbidity is significant in communities or in individuals with low levels of infection.

¹⁰ Communities where 55% or more of the population are infected account for 80% of the onchocercal blindness while communities where 40% or more of the population are infected account for more than 97% of the blindness caused by this disease. Remme J. Strategies for community based and hospital based distribution systems. Presented at the WHO Meeting on Strategies for Ivermectin Distribution through Primary Health Care Systems. WHO, Geneva, 22-25 April 1991. Unpublished document PBL/FIL/IVER/91/WP.12.

¹¹ WHO Technical Report Series, No. 752, p. 131.

Start-up costs

Start-up costs can be defined as the expenditures prior to the time that financial and management responsibilities are fully handed over to the government or other local agency. With many IDPs the start-up phase is expected to last two to five years.

The money spent up-front goes to pay for local and international management and overheads, international conferences, evaluations, operations research, vehicles and other capital equipment as well as the running costs for the first few years. The money spent on each of these categories has played an essential role in generating the momentum that now exists to make full and optimal use of ivermectin. Thus far IDP services have been extended to roughly 5 million recipients per year. By studying the total budgets of IDPs (including overheads) we can learn much about the real cost of launching programmes and we can estimate how much it will cost to extend IDP services to an additional 5 million persons per year. Thus, it is important that we analyse start-up costs.

Long-term running costs

Few of the donors or NGDOs now supporting IDPs are prepared to sustain indefinitely their current levels of financing for these programmes. The financial sustainment of IDPs will depend upon whether governments, other local agencies and the few long-term donors can afford the long-term **running costs**. The challenge with which we are faced is to estimate the long-term running costs based upon financial data from the start-up phase.

After an NGDO has collaborated with agencies of an African government to start an IDP, the running costs will include expenditures on all field incentives, fuel, vehicle maintenance, field office rental and utilities, photocopying/printing and drugs for managing side-effects to treatment. Further estimates should include the salaries and benefits paid to field staff employed by the IDP. Expenditures on short-lived equipment, including vehicles and motorcycles, should also be included in the calculations of the long-term running costs of the programme.¹²

Some IDP cost analyses¹³ have stopped here with their accounting. One category omitted from the above listed items is that covering salaries and benefits paid by agencies of the African government. The rationale for omitting these items is that they appear to be fixed costs (similar to the costs of using vacant buildings) which the government would have

¹² The simplest way to account for short-lived capital expenditures is to amortize the purchase price (including transport, taxes, duties) over the life span of the item. For vehicles and motorcycles operating on rural roads in most parts of Africa or Latin America it might be reasonable and convenient to assume that the life span is 1000 days of *use*. As a conservative estimate it may also be reasonable and convenient to assume that during these 1000 days maintenance and repairs will cost 50% of the purchase price. Thus, for each day of *use*, excluding fuel, a motorcycle with a purchase price of US\$ 2000 would cost US\$ 2 to amortize and US\$ 1 for maintenance and repairs.

¹³ One example is the analysis cited in the WHO *Report of the Meeting on Strategies for Ivermectin Distribution through Primary Health Care Systems*. Geneva, 22-25 April 1991. WHO/PBL/91.24. Pages 11 and 62.

to pay for even if the programme had not been launched. The fact that some government employees are available to work on the IDP suggests to the NGDO and the donors that they must have previously been under-utilized. Under these circumstances neither the donor nor the government appears to have any increased costs as a result of the work which government staff perform for the IDP.¹⁴

It is, however, best to assume that :

- (a) the government staff was fully utilized before the IDP began; and
- (b) the IDP will continue to benefit from the work performed by government staff only if the government increases its salaries and/or hires new staff at the current wage level.¹⁵

Another set of costs has yet to be accounted for - the costs associated with *managing* the IDP. During the start-up phase, much of the management might be provided, or paid for, by the NGDO. The NGDO's budget for the programme might include items such as salary for an expatriate adviser; part of the overheads of various offices; programme evaluations; operations research etc. These expenses typically consume the majority of the money provided by the donor and yet many cost analyses predicting the long-term running costs will omit all of these items.

When attempting to predict long-term running costs, cost analysis should take account of salaries and benefits paid by the government or a local agency and the hidden costs of long-term management.

The reason that these expenditures on NGDO administration are frequently omitted from estimates of running costs is that they are viewed as purely start-up costs. Good management yields benefits that last for many years, e.g. training, long-term plans and research findings. Thus, the NGDO's expenditures on management are similar to capital costs such as those for construction of a building.

The management capacity provided by an NGDO also meets some of the immediate and recurring needs of the programme for refresher training, supervision, accounting, evaluation and short-term planning. The management paid for by an NGDO is a substitute for the management which must ultimately and recurrently be paid for by whatever agency sustains the programme in the long run. **Cost analysis should not ignore the running cost of good administration.** Many cost analyses have omitted the government-paid salaries/benefits

¹⁴ Technically, financial sustainment of an IDP depends upon the ability to pay for the increase in cost, also known as the *marginal cost* due to the programme.

¹⁵ Some government staff might work only part-time on the IDP. The challenge is then to determine what fraction of their total time such workers dedicate to the programme. The cost analyst can then calculate the fraction of each person's salary and benefits which should be included in the IDP cost estimates.

and office overhead expenses of the local officials who ultimately are expected to run the programme.

Cost analysts should estimate the cost of replacing the start-up management with local management capacity. One way to do this is to identify, within the existing bureaucracy, managers with sufficient ability, motivation and office support, and then to determine the full cost of assigning those managers and their office support to the IDP. In the public sector, however, much of the cost of good management may be hidden. In many government bureaucracies, salaries and direct benefits are only part of what motivates the most productive administrators.

There is an alternative and perhaps more reliable way to estimate the cost of good management. We can ask the private sector, for example a local bank, how much they would pay for salary and support for a management position with similar responsibilities.

Table 3 lists the expenditures which should be accounted for when attempting to predict the long-term running costs of an IDP.

Table 3

**ESTIMATING THE LONG-TERM RUNNING COSTS OF AN IVERMECTIN
DISTRIBUTION PROGRAMME**

1. Some costs paid for by the donor during the start-up phase

Recurrent field costs¹⁶

- Field/training allowances
- Salaries/benefits of field workers employed by programme
- Fuel for vehicles and motorcycles
- Rental of vehicles and motorcycles
- Field office rental and utilities
- Printing/photocopying of record forms, training materials
- Drugs for treatment of side-effects

Costs of short-lived capital items

- Vehicles and motorcycles
- Office equipment (photocopier, fax, computer, printer)

2. Some costs paid for by government or other local agency during the start-up phase

- Staff salaries and benefits¹⁷
- Field allowances
- Donations of short-lived equipment (e.g. part-time use of vehicles)

3. Some costs which may be hidden during the start-up phase

- Long-term management

¹⁶ When estimating running costs it is appropriate to exclude field expenditures for survey work (skin snipping or rapid epidemiological assessment). Money spent on survey work should either be treated as a non-recurrent start-up cost or as an expense which recurs only once in five to ten years.

¹⁷ For government staff who work only part-time on the programme it will be necessary to determine what fraction of their salary and benefits to charge to the IDP.

Appendix 1

**SAMPLE RECORD-KEEPING FORMS FOR USE IN IVERMECTIN
DISTRIBUTION PROGRAMMES**

Appendix 1 contains samples of 13 forms which may be used for record-keeping purposes in IDPs. These are :

- Form 1. Epidemiological Assessment Record
- Form 2. Health Education Record
- Form 3. Clinic Ivermectin Treatment Record
- Form 4. Community Ivermectin Treatment Record
- Form 5. Household Ivermectin Treatment Record
- Form 6. Record of Reactions to Ivermectin
- Form 7. Record of Serious Reactions to Ivermectin
- Form 8. Supervisory Checklist for Health Professionals
- Form 9. Supervisory Checklist for Community-Based Distributors
- Form 10. Ivermectin Distribution Tally Record
- Form 11. Inventory Record
- Form 12. Monthly Field Summary
- Form 13. Log for Vehicle or Motor Cycle

All these forms can be produced easily on a standard typewriter.

Their uses are described in Part II, Section 6, "Record-keeping and reporting for IDPs".

Form 5: Household Ivermectin Treatment Record

Community _____ District/Arrondissement/Circle _____ Total population _____

Name of distributor _____ Name of head of household _____

No.	Name	Age	Sex	Absent? (+/-)			
				Pregnant? (+/-)	Delivered a baby in the last week? (+/-)	Ill or weak? (+/-)	Weights less than 15 kg? (+/-)

Total people in household

absent

pregnant

delivered a baby in the last week

very ill or weak

weigh less than 15 kg

tablets of ivermectin distributed

people treated with ivermectin

Form 6: Record of Reactions to Ivermectin

Health worker _____ Date _____
 Name of patient _____ Age of patient _____
 Community of patient _____ District _____

1. Ask "Is it difficult to breathe?" YES NO
 If "YES", go get a nurse immediately
2. Ask "Are you lightheaded when you stand up?" YES NO
 If "YES", tell the person to lie down and drink water
 intermittently.
3. Ask "Is it difficult to walk?" YES NO
 If "YES", go get a nurse immediately
4. Ask "Do you have itching or rash or swelling?" YES NO
 If "YES", give phenergan
5. Ask "Do you have pain?" YES NO
 If "YES", give paracetamol
6. Ask "Do you have fever?" YES NO
 If "YES", give chloroquine and paracetamol

Phenergan dose depends upon age

Age	Dose	Total tabs	Tabs given
5 to 15 years	½ tab, 3*/daily for 2 days	3 tabs	_____
older than 15	1 tab, 3*/daily for 2 days	6 tabs	_____

Paracetamol dose depends upon age

Age	Dose	Total tabs	Tabs given
5 to 15 years	1 tab, 3*/daily for 1 day	3 tabs	_____
older than 15	2 tabs, 3*/daily for 1 day	6 tabs	_____

Chloroquine dose depends upon age

Age	First Dose	After 6 hours	After 1 day	After 2 days	Total tabs	Total given
5 to 12 years	2	1	1	1	5	_____
13 years or older	4	2	2	2	10	_____

Form 7: Record of Serious Reaction to Ivermectin

Complete this record at the same time that you treat the patient

Remember to also complete an "Adverse Experience Report Form" and send it to Merck/France

Health worker _____ Date _____

Name of patient _____ Age of patient _____

Community of patient _____ District _____

- 1. Ask "Is it difficult to breathe?" YES NO
- 2. Ask "Are you lightheaded when you stand up?" YES NO
If "YES", tell the person to lie down and drink water intermittently.
- 3. Ask "Is it difficult to walk?" YES NO
- 4. Respiratory rate (RR) _____
- 5. Pulse rate _____
- 6. Wheezing heard with a stethoscope? YES NO

If you hear wheezing with a stethoscope and the person has difficulty breathing then give the person a subcutaneous injection of adrenalin (follow the directions "How to Treat Asthma with Adrenalin")

Check the time, RR, pulse and wheezing each time that you give adrenalin and use the following chart to keep a record:

<u>Time</u>	<u>RR</u>	<u>Pulse</u>	<u>Wheezing (Yes or No)</u>	<u>Dose of adrenalin</u>
_____	_____	_____	_____	_____ cc
_____	_____	_____	_____	_____ cc
_____	_____	_____	_____	_____ cc

What is the total amount of adrenalin given? _____ cc

Please turn over and complete the opposite side of this form.

Form 7: Serious Reactions (continued)

7. Blood pressure (BP) lying down ____/____

8. Blood pressure (BP) standing ____/____

Note: if the person is too lightheaded to stand, then measure the BP when the person is sitting up. After you have measured the BP, ask the person to lie down again.

9. Does the systolic BP fall more than 15 when the person sits up or stands?

YES NO

10. Is the systolic BP less than 75 when lying down?

YES NO

If the patient is lightheaded when standing up or has difficulty walking and you answered "YES" to question 9 or question 10, then begin to give an intravenous infusion.

(follow the directions "How to Give an Intravenous Infusion")

Repeat the measurements of pulse and BP (lying down) every 30 minutes until the patient can stand up without feeling lightheaded.

Use the following chart to record the Time, Pulse, BP, whether the patient is still lightheaded when standing up and the amount of infusion which the patient has received before this time.

<u>Time</u>	<u>Pulse</u>	<u>BP</u>	<u>lightheaded (YES or NO)</u>	<u>Volume of infusion</u>
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC
_____	_____	_____	_____	_____ CC

What is the total volume of infusion given? _____ cc

If you answered "NO" to question 9 and question 10 do not give any infusion. Ask the patient to rest and drink a lot of water. Stay with the patient until he or she can stand up or walk without feeling lightheaded. Measure the pulse and BP every 30 minutes and record them on the chart above.

If the patient begins to feel worse, then measure the BP standing (or sitting) and answer questions 9 and 10 again. Follow the instructions above to decide whether an infusion is necessary.

Form 8: Supervisory Checklist
(for evaluation of work done by health professionals)

Name of supervisor: _____ Name of area: _____

Name of community: _____ Date: _____

Instructions: The supervisor should visit a random sample of 5% to 10% of all communities benefiting from the ivermectin distribution programme. This includes communities where epidemiological assessment or health education activities were carried out as well as communities which have already received ivermectin. While visiting, the supervisor should speak with the head of the community and other residents of the community to determine whether there are any complaints. The supervisor should bring along relevant records of all field work (Epidemiological Assessment Records, Health Education Records, Community Ivermectin Treatment Records, Clinic Ivermectin Treatment Records, Log for Vehicle or Motorcycle) and ask the following questions to determine whether these records were completed accurately. Skip any section that is not relevant

1) Supervision of epidemiological assessment

- a. Did someone come to this village to examine men for nodules or to take a sample of skin (demonstrate) Yes/No
- b. When was that (e.g. "2 weeks ago", or "3 days ago") _____
- c. What was his name? _____
- d. How long did the person stay in the community? ____*
- e. How many people did he examine? (5? 10? 30?) _____
- f. Does anyone have any complaints about the work that this person did? Yes/No (If "Yes", record the complaint below)

2) Supervision of health education

- a. Did someone come to this village to teach people about _____ (use vernacular term for onchocerciasis) and a new drug that can treat this disease? Yes/No
- b. When was that? (e.g. "2 weeks ago", or "3 days ago") _____
- c. What was his name? _____
- d. How long did the person stay in the community? ____*
- e. How many people did he speak to? (5? 20? 100?) _____
- f. Did you hear him when he talked about the new drug? Y/N
- g. Who should take this new drug? _____
- h. Who should not take this new drug? _____
- i. How often should a person take this new drug? _____
- j. Does anyone have any complaints about the work that this person did? Yes/No (If "Yes", record the complaint below)

* Whole day, $\frac{1}{2}$ day, morning, afternoon

Form 8: Supervision of Health Professionals (continued)**3) Supervision of community distribution****(for evaluation of distribution by mobile professionals)**

- a. Did a health worker come to this community to distribute a new drug for treating _____ (use vernacular term for onchocerciasis) ? Yes/No
- b. When was that? (e.g. "2 weeks ago", or "3 days ago")
- c. How many workers came to distribute this new drug? _____
- d. How long did they stay in the community? _____ *
- e. How many people did they treat? (20? 100?) _____
- f. When should people in this community take this new drug again?
- g. Does anyone have any complaints about this drug or the way that it was distributed? Yes/No
(If "Yes", record the complaints below)
- h. Please help me to find these five people
Select five names at random from the list of people treated. To help people identify the person read the name of the head of the household. Visit the house of each person. Ask whether the person received ivermectin. Ask when they received ivermectin. Ask how many tablets they received. Are there any major discrepancies between what is written on the Community Ivermectin Treatment Record and what people tell you?
i. Yes/No ii. Y/N iii. Y/N iv. Y/N v. Y/N

4) Supervision of clinic-based distribution

- a. In the last year did many people from this community go to a clinic to get a drug for treatment of _____ (use vernacular term for onchocerciasis) ? Yes/No
- b. What is the name of the clinic they went to? _____
- c. When should people in this community take this new drug again?
- d. Does anyone have any complaints about this drug or the way that it was distributed? Yes/No
(If "Yes", record the complaints below)
- e. Please help me to find these five people
Select five names at random from the list of people treated. Visit the house of each person. Ask whether the person received ivermectin. Ask when and where they received ivermectin. Ask how many tablets they received. Are there any major discrepancies between what is written on the Community Ivermectin Treatment Record and what people tell you?
i. Yes/No ii. Y/N iii. Y/N iv. Y/N v. Y/N

* Whole day, $\frac{1}{2}$ day, morning, afternoon

Form 9: Supervisory Checklist
(for final evaluation of the Community-Based Distributors)

After a CBD has finished distributing ivermectin, the supervisor should visit the community one final time to do the following tasks. Place a check mark next to each task after completing it.

- ___ 1. If applicable, collect the weighing scale or tape measure.
- ___ 2. Collect the remaining ivermectin. Count the number of tablets of ivermectin remaining. Record this on the **Ivermectin Distribution Tally Record**. Also write on the tally record the name of the community, the name of the CBD, the dates of distribution and the total number of tablets of ivermectin originally supplied to the CBD.
- ___ 3. Collect the **Household Ivermectin Treatment Records**.
How many of these records are there? _____
- ___ 4. Use the **Ivermectin Distribution Tally Record** to add up the treatments recorded on the **Household Distribution Treatment Records**: for each person who was treated place a mark on the tally record to indicate the number of tablets given to that person. Add up the treatments and determine how many tablets are missing. If more than 10 tablets of ivermectin are missing question the CBD carefully to learn why and record the reason on the back of the tally record. Use a stapler, pin or paper clip to attach the completed tally record to this Supervisory Checklist.
- ___ 5. Collect the **Records of Reactions to Ivermectin**.
How many of these records are there? _____
Ask "How many serious reactions* occurred in this community?"

For each serious reaction, ask the CBD to show you the specific record of the reaction. Discuss each serious reaction with the CBD to make sure that it was managed appropriately. If the reaction was mismanaged, comment in detail on the back of the record of the reaction. Use a stapler, pin or paper clip to attach the records of all serious reactions to this Supervisory Checklist.

- ___ 6. Interview the head of the community.
- a) Is there anyone in the community who is not satisfied with the work done by the CBD? (Yes or No) _____
- b) Are there some people in the community who did not receive the ivermectin? (Yes or No) _____
- c) Are there some people in the community who had a bad reaction after taking the ivermectin? (Yes or No) _____

If the head of the community answers "Yes" to any of these three questions find out why and report.

* A health professional must be called to come and review a serious reaction within 24 hours.

Form 9: Supervision of CBDs (continued)

7. Pick at random five Household Ivermectin Treatment Records. Ask the CBD to help you find the house which corresponds to each of these five household records. Visit the five houses to interview the residents:

a) Read the names listed on the household treatment record. Ask whether each of these people actually lives there and whether they received ivermectin. Ask someone to tell you the age of each person listed. Check that the age roughly agrees with what is written on the household form. Do you detect any major discrepancy between what is written on the household records and what the residents of the house tell you ?

i. Yes/No ii. Yes/No iii. Yes/No iv. Yes/No v. Yes/No

b) In each house ask "Is there anyone who is not satisfied with the work done by the CBD?"

i. Yes/No ii. Yes/No iii. Yes/No iv. Yes/No v. Yes/No

c) In each house ask "Is there anyone here who will refuse to take the drug again?"

i. Yes/No ii. Yes/No iii. Yes/No iv. Yes/No v. Yes/No

If the answer is "Yes" for any house explain on the back of the tally record.*

d) In each house ask "Which disease will this drug treat?" For each house indicate whether their answer is right or wrong.

i. Right/Wrong ii. R/W iii. R/W iv. R/W v. R/W

e) In each house ask "When should you take the drug again?" The correct answer is "one year from now". For each house indicate whether their answer is right or wrong.

i. Right/Wrong ii. R/W iii. R/W iv. R/W v. R/W

8. Has the CBD received his allowance as previously agreed on?

* Try to convince the person to continue to take the drug in future.

Form 10: Ivermectin Distribution Tally Record

Place of distribution _____

This record includes distribution from _____ to _____
(date) (date)

How many tablets did you have at the beginning of this period? _____

Mark in the appropriate space for each person given ivermectin

1/2 tab:

Sub-Total ____ x 0.5 = ____

1 tab:

Sub-Total ____ x 1 = ____

1 1/2 tabs:

Sub-Total ____ x 1.5 = ____

2 tabs:

Sub-Total ____ x 2 = ____

Total people treated ____

Total tablets distributed ____

How many tablets do you have at the end of this period? _____

How many tablets are missing?

(tabs at beginning) minus (tabs at end) minus (tabs distributed)
= _____

On the back of this paper please comment if any tablets are missing
or if any problems occurred during drug distribution

Form 12: Monthly Field Summary

Administrator _____

Area for which you are responsible _____

For the time period beginning _____ and ending _____
(date) (date)

1. Epidemiological assessment
List the communities in which epidemiological assessment was completed during this period.

2. Health education
List the communities in which health education meetings (10 or more people) were held during this period. Give the number of meetings if more than one meeting was held in a community.

3. Training of community workers
List the communities for which community workers have been trained during this period. Give the number of workers if more than one worker was trained in a community.

4. Training of health professionals
List the sites where training courses were held for health professionals during this period. Give the number of health professionals trained at each site.

Form 12: Monthly Field Summary (continued)

5. Ivermectin distribution

List the communities from which people were treated and the number of people treated from each of these communities.

6. Ivermectin inventory

During this period how many tablets did you ...

...have at the beginning of the period?	_____
...receive from the central store?	+ _____
...return to the central store?	- _____
...issue to the field?	- _____
...collect from the field?	+ _____
...have at the end of the period?	- _____
...not account for	= _____

Comment in a separate report about tabs not accounted for.

7. Vehicle/motorcycle movement

License plate number _____

Odometer at beginning _____

Odometer at end _____

Comment on a separate piece of paper about repairs costing more than U.S. \$20.

8. Serious reactions

During this period how many people had serious medical problems (wheezing, fainting, other) within 4 days after taking ivermectin? _____

For each serious reaction include along with this summary copies of the "Record of Serious Reaction to Ivermectin" and the "Adverse Experience Report Form"

Appendix 2

SAMPLE ANNUAL REPORTING FORM FOR IDPs

NGDO Coordination Group for Ivermectin Distribution

ANNUAL REPORTING FORM FOR MEMBER ORGANIZATIONS

SECTION 1. IVERMECTIN DISTRIBUTION

1. Reporting NGDO or Agency: e.g. Africare	
2. Project name: e.g. Southern Chad River Blindness Project	
3. Country: e.g. Republic of Chad	
4. Target Area: e.g. Préfectures of Mayo Kebbi, Logone Orientale, Logone Occidentale, Tandjele, Moyen Chari and Salamat	
5. Implementing NGDO or Agency and partners: e.g. Africare and Chad Ministry of Health, with UNICEF and local religious missions	
6. Donor(s) of Funds: e.g. River Blindness Foundation	
7. Present funding period: e.g. Three years, June 1992-May 1995	
8. Date on which field activities of the present project started in-country: e.g. January 1993	

9. Date ivermectin first distributed by the present project in project area: e.g. April 1993	
10. If the present project is a continuation of a previous project (perhaps conducted by another organization) please give the name of the organization which executed the previous project and the period which it covered: e.g. Continuation of World Vision project of April 1990 - March 1993	
11. Calendar year covered by this report e.g. January - December 1993	
12. What criteria (in terms of threshold onchocerciasis endemicity level and of population) are used to determine whether a community ¹ is eligible for ACTIVE community-wide ("mass") ivermectin therapy? e.g. <u>For endemicity level:</u> - 20% or more nodules carriers in adult male sample; and/or 40% prevalence of <u>O.volvulus</u> infection in adult population; and/or 30% prevalence of <u>O.volvulus</u> infection in whole population. <u>For community size:</u> - rural communities of less than 1000 population	
13. What method of estimating dosage of ivermectin is used in your project? Estimation by weight by height as a surrogate for weight other (please specify)	

¹Defined as a conglomeration of people, in a locality, bound together by the same ties or administration, which may be traditional, political or any authority pertinent to the society in question

14a) Population covered by annual ACTIVE community-wide ivermectin distribution.

	No. of Communities ²	Total Population ³
"AT-RISK" POPULATION. All people living in communities in an area where onchocerciasis is endemic		
"TARGET" POPULATION. All people living in communities in the Target Area wherein the endemicity level is at, or above, the threshold for active community-wide treatment defined in 12. above		
"ELIGIBLE" POPULATION. All members of the Target Population who are eligible to take ivermectin at the time of distribution	NOT APPLICABLE	
"TREATED" POPULATION.* All members of the Eligible Population who received ivermectin during the reporting period		
"COVERAGE". The Treated Population expressed as a percentage of the Target Population		

* **Note :** Please indicate the numbers of communities receiving their first, second, third or other rounds of annual treatment and the numbers of persons in them who were treated during this year's round(s) of treatment, as in the next table.

²Refers to the number of communities containing the population so defined

³The total population in any community is best assessed by means of a house-to-house pre-treatment census. Failing that, the figures from the last previous government or other census should be used

14b) Breakdown of treated population by number of rounds of treatment :

Treated population	No. of communities	Total population
1st round		
2nd round		
3rd round		
4th round		
5th round		
6th round		
7th round		
8th round		
9th round		
10th round		

15. Methods employed for ACTIVE community-wide distribution.

	No. of communities	Total population
MOBILE TEAMS: health professionals travelling to target communities (give means of transport used).		
OUTREACH DISTRIBUTION ⁴ : from health centre, supported by community-based distributors (CBDs).		
CBDs ONLY: lay persons resident in the target communities.		
FIXED HEALTH INSTITUTIONS ⁵ (health centre, health post)		
OTHER METHODS (specify): e.g. outreach linked to EPI, MCH or primary eye care),		

⁴Specifically for ivermectin distribution

⁵Applies to countries where ivermectin distribution to the "target population" occurs only from health centres where the population must go to be treated

16. Give the endemicity levels of communities treated with ivermectin by active community-wide methods.

ENDEMICITY LEVEL	HYPER (URGENT)	MESO (highly desirable)	HYPO	NOT KNOWN
No. of communities treated.				
Total population in above communities.				
No. of persons treated in above communities during the reporting period.				

N.B. For the purposes of this report, the level of endemicity in a community or a group of communities is defined as follows:-

ENDEMICITY LEVEL	Prevalence (%) of <i>O.volvulus</i> in:		Percent nodule carriers in REA sample	No. of nodule carriers in 30-man REA sample
	adult males	whole community		
HYPER (URGENT)	80	60	40	12
MESO (highly desirable)	40 - 79	30 - 59	20 - 39	6 - 11
HYPO	20 - 39	15 - 29	10 - 19	3 - 5
SPORADIC	1 - 19	1 - 14	1 - 9	1 - 2

Note (a) If skin-snip or nodule data have not been collected in a particular community, classify that community according to the average skin-snip or nodule prevalence in those communities having similar ecological conditions which lie within 10 km. of the community concerned and for which data have been collected.

(b) If data are not available on individual communities, please provide data on groups of communities having similar ecological conditions.

17. Population covered by CLINIC-BASED or "passive" ivermectin distribution.

	No. of communities ⁶	Total population
"TARGET" POPULATION. All people living in communities wherein the endemicity level is <i>below</i> the threshold for active community-wide treatment defined in 12. above		
"ELIGIBLE" POPULATION. All members of the above Target Population who are eligible to take ivermectin at some time during the reporting period	NOT APPLICABLE	
"TREATED" POPULATION. All members of the Eligible Population who received clinic-based ivermectin during the reporting period		
"COVERAGE". The Treated Population expressed as a percentage of the Target Population		

⁶Refers to the number of communities containing the population so defined

ANNUAL REPORTING FORM FOR MEMBER ORGANIZATIONS

SECTION 2. COSTING

This form allows an estimate to be made of the RECURRENT COSTS of the IDP, which would have to be assumed by the national health authorities when the programme is handed over.

DO NOT INCLUDE the following costs:-

- (a) Any start-up expenditure that will not recur;
- (b) Expenditure for skin-snipping or Rapid Epidemiological Assessment.

DO INCLUDE expenditure during the reporting period on the following items⁷.

(A) RECURRENT field expenditure PAID BY THE DONOR:

	U.S. \$
TRAINING & FIELD WORKERS' INCENTIVES (PER DIEM, TRAVEL, SUBSISTENCE, ETC.)	
SALARIES/BENEFITS OF IN-COUNTRY OFFICE & FIELD WORKERS EMPLOYED BY THE PROGRAMME	
FUEL	
RENTAL OF VEHICLES AND MOTOR CYCLES FOR FIELD USE	
RENTAL, UTILITIES AND OTHER EXPENSES OF THE FIELD OFFICE	
PRINTING/PHOTOCOPYING OF CARDS, FIELD RECORDS, TRAINING MANUALS, HEALTH EDUCATION MATERIALS AND STATIONERY	
DRUGS FOR TREATMENT OF SIDE-EFFECTS	
OTHER SUPPLIES (Please specify)	
	TOTAL:

⁷Some expenditure may not be 100% attributable to the cost of publicizing or distributing ivermectin. If this is so, please estimate the percentage of the expenditure which is attributable.

(B) COSTS OF SHORT-LIVED EQUIPMENT (based on a total of 1000 days of use and including licensing, insurance, maintenance and repairs estimated at 50% of the original purchase price):

	U.S. \$
Motor vehicle No. 1: purchase price x 0.0015 x days of use	
Motor cycle No. 1: purchase price x 0.0015 x days of use	
Photocopying machine: purchase price x 0.0015 x days of use	
FAX machine: purchase price x 0.0015 x days of use	
Computer and printer: purchase price x 0.0015 x days of use	
Other items of equipment over \$1000 (please specify)	
	TOTAL:

(C) ITEMS paid for by the GOVERNMENT or other local agency

	U.S.\$
STAFF SALARIES AND BENEFITS ⁸	
FIELD INCENTIVES (PER DIEM, etc.)	
OTHER ⁹	
	TOTAL:

⁸For government staff who work only part-time on the programme, please determine what fraction of their time, and thus what fraction of their salaries and benefits, to attribute to the IDP.

⁹Include any other in-kind contributions for which the government or other local agencies must spend extra in order to provide for the IDP

(D) COST-RECOVERY PROGRAMME. Please indicate whether any cost-recovery programme from recipients of ivermectin is in force in the IDP. If so,

What was the amount charged per person per annum?	
What was the total amount taken during the reporting period?	
For what purpose(s) was this amount used?	
Who was responsible for accounting for the funds received?	

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