

GUIDELINES FOR
RAPID ASSESSMENT OF LOA LOA

UNDP/World Bank/WHO
Special Programme for Research & Training in Tropical Diseases (TDR)



TDR/IDE/RAPLOA/02.1

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Questionnaire photo: R. Davidson (Courtesy of the Wellcome Trust Tropical Medicine Resource)

Concept and design: Andy Crump, Lisa Schwarb

Summary

RAPLOA is a rapid assessment procedure for *Loa loa* that uses a simple questionnaire on the history of eye worm to predict whether or not loiasis is present in a community at a high level of endemicity. In highly endemic communities, there is a risk of severe adverse reactions to the drug ivermectin following its use as treatment for either onchocerciasis or lymphatic filariasis. RAPLOA will facilitate the planning of ivermectin distribution programmes by predicting in which communities ivermectin treatment for onchocerciasis can be safely implemented.

This document describes the RAPLOA method, and provides guidelines on how to implement RAPLOA and how to interpret the results.

The guidelines are intended for planners and implementers of ivermectin distribution programmes in Africa.

Background

Reports from Cameroon indicated that severe and sometimes fatal encephalopathic adverse reactions may occur in patients who have taken ivermectin for treatment of onchocerciasis and who have a high intensity of *Loa loa* infection. Mass treatment with ivermectin is the principal intervention of programmes to eliminate onchocerciasis and lymphatic filariasis as public health problems from the African continent. The reported risk of severe adverse reactions due to *L. loa* now threatens the success of the onchocerciasis and lymphatic filariasis programmes in much of Central Africa where *Loa loa* may be endemic.

The risk of severe adverse reactions is related to the intensity of infection with *L. loa*, with the risk becoming high when the microfilarial load exceeds 30 000 mf/ml. Individuals with such high *L. loa*

microfilarial loads usually live in communities where there is a high level of loiasis endemicity. It is very important, therefore, to assess the level of loiasis endemicity in the community before initiating mass treatment against onchocerciasis in areas that are potentially endemic for *L. loa*.

The classical method used to determine the presence and intensity of *L. loa* infection is examination of blood smears using a microscope. However, this procedure is time-consuming and invasive (thus ethically unappealing) and is therefore not feasible within the context of large-scale ivermectin treatment for onchocerciasis. So it was important to develop a simple, non-invasive tool with which to rapidly assess the level of endemicity of loiasis in the community.

One such tool, a standardized questionnaire based on the clinical signs of loiasis (migration of adult *L. loa* under the conjunctiva, and Calabar swelling), was tested recently in a multicentre study carried out by three research teams from Cameroon and Nigeria. This study showed that, in areas of high endemicity of loiasis, eye worm and Calabar swelling are well known to members of the community who, in most cases, have local names for the conditions. In areas of low endemicity, however, the symptoms are not known. Thus the presence of local names indicates the presence of the disease in the community.

The proportion of interviewees reporting a history of eye worm (i.e. eye worm lasting less than seven days and confirmed by a photograph of an adult *L. loa* worm in the eye) correlated well with

the parasitological indices of endemicity. A cut-off point of 40% prevalence of eye worm history was found to be a suitable threshold for identifying communities which are at high risk from ivermectin treatment.

Hence, a simple method using a questionnaire on the history of eye worm was shown to predict the level of endemicity of *L. loa*. The method was found to be rapid, simple, non-invasive and was recommended for use in areas where *L. loa* may be endemic.

Rapid assessment procedure for *Loa loa* (RAPLOA)

RAPLOA is a method to predict, for a given community, the level of endemicity of *Loa loa* and the risk of severe adverse reactions after ivermectin treatment.

- ① Identify local names for eye worm.
- ② Collect information on the history of eye worm from 80 adults.
- ③ Calculate percentage of adults who report a history of eye worm, and predict level of *Loa loa* endemicity.

RAPLOA consists of three steps:

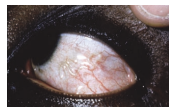
STEP 1

Identification of local names for eye worm using a community-level questionnaire.

STEP 2

Collection of information on the history of eye worm, from a sample of 80 adults in the community, using an individual-level questionnaire which has three key questions asked in the following sequence:

? Have you ever experienced or noticed worms moving along the white part of your eye?



If the answer is YES, the interviewer should then show a photograph of a *Loa loa* adult worm in

the eye, guide the respondent to recognize the worm, and ask two further questions:

? Have you ever had the condition in this picture?

? The last time you had this condition, how long did the worm stay before disappearing?

Respondents who answer positively to the first two questions, and who report that the last experience of eye worm did not exceed seven days, are recorded as having a history of eye worm.

STEP 3

Calculation of the percentage of adults who report a history of eye worm, and, on the basis of this percentage, prediction of the level of *Loa loa* endemicity. If more than 40% of respondents in a community have a history of eye worm, the level of *Loa loa* endemicity and the risk of severe adverse reactions is predicted to be too high for routine ivermectin treatment.

How to execute RAPLOA

RAPLOA coordinator is responsible for:

- ① Organizing the survey.
- ② Recruiting and training interviewers.
- ③ Overall supervision of field work.
- ④ Analysis and interpretation of data.

RESPONSIBILITY FOR THE SURVEY

One person is appointed to coordinate the RAPLOA exercise.

SURVEY TEAM

Composition of the team

It is recommended that a team be composed of the following:

- 3 interviewers
- 1 driver
- 1 field assistant

One of the interviewers acts as team leader and coordinates data collection in the field. The field assistant acts as guide and facilitator where needed, and as interpreter where there are problems of communication.

Recruitment and training of the team

Interviewers who administer the questionnaires at community level should be trained in interviewing techniques, and preferably should have a basic background in social science field work techniques or community-oriented medical care. It is also advantageous if they are knowledgeable about the areas where they will conduct the survey.

SELECTING THE COMMUNITIES TO BE SURVEYED

RAPLOA is intended for use in those communities which are earmarked for inclusion in ivermectin treatment campaigns for onchocerciasis or lymphatic filariasis and which are located in areas that are potentially endemic for *Loa loa*.

PREPARING FOR THE SURVEY

Selecting a suitable time

It is preferable to undertake RAPLOA during the dry season, to avoid transport problems. Also, peak farming periods should be avoided as far as possible. Other climatic and seasonal factors that may affect the accessibility of survey areas and the participation of the population need to be taken into consideration as well.

Survey team requires:

- ① Questionnaires and record forms.
- ② Photograph of eye worm (sample in the back of this manual).
- ③ Up-to-date map of the region plus GPS data, where possible.
- ④ Notebooks, pens, pencils, erasers (at least two of each).

Materials

1. Questionnaires and record forms

Questionnaires and record forms (see pages 14-15) should be reproduced in sufficient quantities before the start of the survey. At least 10 copies of Form A (record of individual interview results) are required for each community to be surveyed, and at least three copies of Form B (summary of survey results) are needed for each area or health district covered. The forms should be reproduced by clean photocopy or print, and should be clearly legible.

2. Photographs

Each interviewer should have a picture of the eye worm. Plasticized copies of the photo used in the multicountry study, see sample located in the back of this manual, can be obtained from TDR.

3. Maps

Each team should have an up-to-date map of the study area. It is recommended that each team be equipped with a GPS (global positioning system) to collect the exact geographical coordinates for each village surveyed; this will avoid the problems of locating the survey villages when mapping the results of the rapid assessment.

4. Stationery

Stationery, (pens, pencils, notebooks, erasers) should be procured in sufficient quantities. Every interviewer should have at least two of each.

During the preliminary visit:

- ① Inform community.
- ② Obtain consent.
- ③ Record geographical coordinates of the village.
- ④ Obtain local names for eye worm.

Costing

In estimating the costs of transport and logistics, the expected condition of the roads, the pattern of human settlement, and the travel time should be taken into consideration. Each situation dictates its own requirements, and adequate preparations must be made to avoid unnecessary transport problems. Adequate allowance also needs to be made for food and lodging since the survey team may be in the field for several weeks.

FIELD WORK

Administrative clearance should be obtained in advance from local administrative officials. Health officials should be contacted and briefed on the objectives and expected outcomes of the assessment.

Preliminary visit to the community

It is recommended that a preliminary site visit be made to inform members of the community about the nature of the exercise and to obtain their consent.

1. Briefing the community on the objectives

The rationale of the survey should be explained during the **preliminary visit**. It should be emphasized that, although adults only are examined during RAPLOA, this does not mean that younger people are discriminated against; eligible children will be treated if and when a plan to control onchocerciasis and/or lymphatic filariasis using the drug ivermectin is introduced in the area. The community must be informed of the impending visit of the survey team at this time.

2. Obtaining the collective consent of the community

The issue of consent is of crucial importance if any valid data are to be collected. It is not only ethically incorrect to compel community members to cooperate (even if they are the principal beneficiaries of the study), but it will also be counterproductive if they are reluctant to participate. The community should freely decide to participate in the survey and no attempt should be made to use coercive measures to get the members to cooperate. When the community's own free consent is obtained, the survey will work out a lot easier.

3. Identifying assistance from the community

The community can be involved in the survey in several ways. **Community leaders** need to mobilize the community before the survey team arrives, so that community members are not taken unawares or involved in other activities when the team arrives. Communities respond better when they are better informed, and the assistance of their leaders should be expressly sought in mobilizing them. The community's assistance is also required for organizing temporary accommodation if the team needs to spend the night in the community. There may also be a need to involve members of the community in interpreting where there are communication problems between team and community members.

Community leaders mobilize their community before the survey team arrives.

Geographical coordinates of the village should be recorded.

Key informants provide local names for eye worm.

4. Determining local terms for eye worm

During the preliminary site visit, the community-level questionnaire is administered in order to identify any local terms for eye worm that can be used in the individual-level questionnaire. The community questionnaire will be administered to a few **key informants**, e.g. village heads, school teachers, health workers, patent medicine dealers, traditional heal-

ers, women and group leaders. The interviewing should continue till there is confidence that the local term elucidated does indeed refer to eye worm. The community questionnaire may be administered to a group, and the picture of the eye worm should be shown to help probe for the correct term. Selection of a wrong name at this stage could have grave consequences for the results and lead to wrong decisions being taken about treatment. Where required, interpreters from the community should assist in the interview process.

5. Coordinates of the village

During the preliminary visit, the geographical coordinates of the village should be determined using the GPS and recorded. It is recommended that the **coordinates are recorded** in decimal degrees.

Survey in the community

1. Selecting households to survey

The individual interview is conducted at the household level. **Households** to be included in the survey are selected randomly when the survey team arrives in the village. Different random sampling procedures can be used. One option used where the settlement pattern is nuclear, i.e. concentrated around a central area, is to determine a direction by spinning a bottle on the ground and selecting the direction in which the mouth of the bottle points when it has come to a standstill. Starting in the selected direction, **all adults** in the first household are interviewed, followed by all adults in the next household, and so on until 80 respondents – the required number per community – have been reached. If the team gets to the last house in the selected direction without reaching **80 adults**, it returns to the original spot and spins the bottle again to find a new direction. Where the settlement pattern is ‘linear’, i.e. follows a (straight) line such as a main road, the bottle may be spun to decide in which of the two directions to go. Again, all households in the selected direction are included until the required number of 80 adults has been reached.

Households should be selected randomly.

All adults in each household should be interviewed individually, provided they consent.

A total of 80 adult individuals should be interviewed in each community.

2. Selecting individuals in the households

In each community, a sample of 80 subjects of both sexes, aged 15 years and above, are interviewed. All interviewees must have been resident in the community for at least 5 years.

3. Obtaining individual consent

The consent of each respondent is obtained before undertaking the interview. As with the community, no assumptions should be made concerning the willingness of the individual to participate. Each respondent should be briefed on the objectives of the survey and each should clearly understand that he/she is free to participate or refuse.

4. Conducting interviews with individuals

The interview should take place within the household but at a distance from normal activities. The interviewees in each household are questioned one at a time to ensure confidentiality and avoid influencing the responses of others in the household. The interviewer first approaches the head of household, introduces himself/herself and the purpose of the study, and indicates that he/she would like to interview persons in that household. After obtaining consent, he/she proceeds to interview each consenting adult individually.

IT IS VERY IMPORTANT THAT THE SEQUENCE OF QUESTIONS, RECORDING, AND USE OF THE PHOTOGRAPH, IS STRICTLY FOLLOWED.

The results of the interviews are recorded on Form A (see page 14).

The first question to be asked in each interview is:



Have you ever experienced or noticed worms moving along the white part of your eye?

After recording the response, the interviewer then shows a photograph of the eye worm to each respondent, guiding him/her to recognize the worm in the eye. Care should be taken to ensure that there is no confusion between eye worm and veins in the eye. This is followed by the second question:



Have you ever had the condition in this picture?

After recording the response, the interviewer proceeds to ask the third question:



The last time you had this condition, how long did the worm stay before disappearing?

It is very important that the sequence of questions, recording, and use of the photograph, is strictly followed.

5. Recording the information

For each community, the results of the survey are summarized on Form B (see page 15) by the team leader. The geographical coordinates (longitude and latitude) of the study village must be indicated. The results, recorded on Forms A and B, are then transmitted to the central level. Here, the officer in charge of RAPLOA cross-checks the summary results on Form B using the original information on all the Forms A.

DATA ANALYSIS AND INTERPRETATION

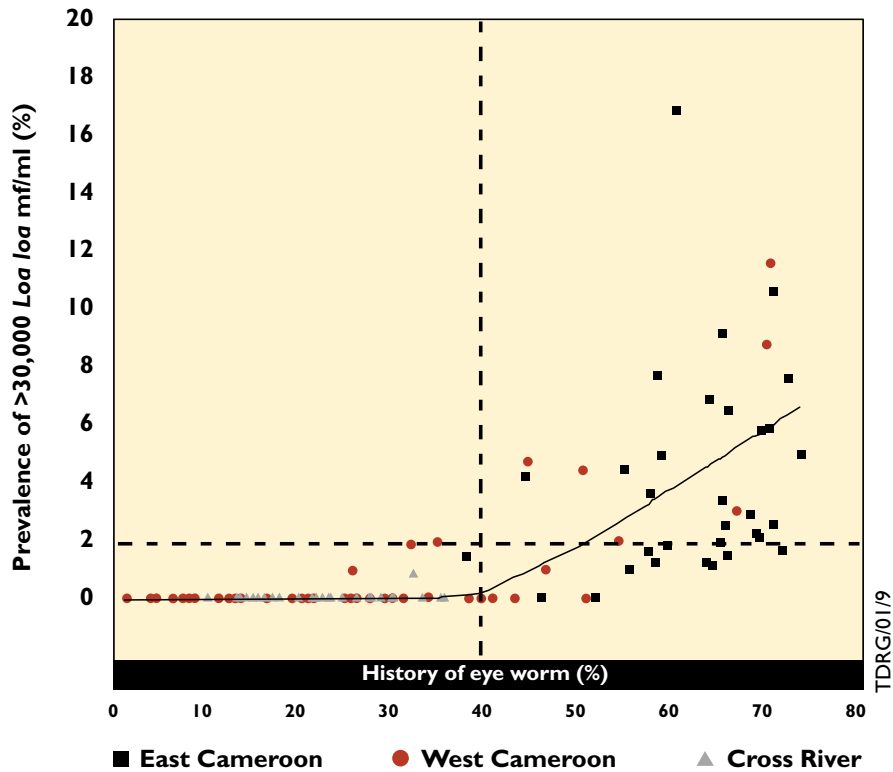
The original study concluded that there might be a significant risk of severe adverse reactions to ivermectin treatment where more than 40% of interviewees report a history of eye worm. Some results from this study are given in the figure overleaf, which shows that very high *Loa loa* microfilarial loads are rare if less than 40% of interviewees report eye worm, but that high microfilarial loads become increasingly frequent above the threshold of 40%.

A threshold of 40% should be used to determine high-risk communities.

Thus, it is recommended that the threshold of 40% be used to classify communities according to risk of adverse reactions to ivermectin treatment. Potentially high risk communities are those where more than 40% of members report a history of eye worm, and low risk communities are those where less than 40% of members report a history of eye worm.

In instances where several communities are classified as high risk, it is important to plot the results on a map to determine in which geographic area(s) there may be a high risk of adverse reactions to ivermectin treatment.

Relationship between the prevalence of very high microfilarial loads (>30,000 mf/ml) and RAP based on the history of eye worm



COMMUNICATION OF RESULTS

The results should be communicated to:

- ① Communities involved
- ② Ministry of Health
- ③ Health management teams
- ④ Non-governmental organizations (NGOs) involved
- ⑤ Disease control programmes (for Onchocerciasis and Lymphatic Filariasis)

The results of the survey are communicated to:

- The communities that were involved in the survey and that are targeted for ivermectin treatment, i.e. who are the principal beneficiaries of the exercise.
- Ministries of Health, including national coordinators for the control of onchocerciasis and lymphatic filariasis, and, where present, national task forces for these two diseases.
- Health management teams and other relevant health services in the districts concerned.
- Non-governmental agencies involved in programmes of ivermectin distribution for onchocerciasis and/or lymphatic filariasis.
- Regional programmes for onchocerciasis control (e.g. African Programme for Onchocerciasis Control (APOC)) or lymphatic filariasis elimination.

RAPLOA Form A: Record of individual interview results

Village name: _____

Interviewer name: _____

No.	a) Ever experienced worms moving along white part of eye Y/N	b) Confirmation of experience with photograph Y/N	c) Duration of last experience between 1-7 days Y/N	History of eye worm (Yes if Yes for all three questions a, b and c) (No if No for one or more of questions a, b and c) Y/N
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YES = Y No = N





WHO/TDR
Avenue Appia 20
1211 Geneva 27
Switzerland
Tel: (+41) 22-791-3725
Fax: (+41) 22-791-4854
E-mail: tdr@who.int
Web: www.who.int/tdr