



**INDEPENDENT EVALUATION OF IVERMECTIN
TREATMENT COVERAGE UNDER COMMUNITY DIRECTED
TREATMENT WITH IVERMECTIN (CDTI)
BENIN – TOGO**

Survey report

March 2016

Table of contents

ACKNOWLEDGEMENT	
LIST OF TABLES	
LIST OF FIGURES	
LIST OF APPENDICES	
LIST OF ABBREVIATIONS AND ACRONYMS	
REPORT SUMMARY	
1- INTRODUCTION	10
1.1- CONTEXT AND JUSTIFICATION OF THE INDEPENDENT EVALUATION	10
1.2- THE OBJECTIVES OF THE INDEPENDENT EVALUATION	12
1.3- THE RESULTS OF THE INDEPENDENT EVALUATION	12
2- MATERIALS AND METHOD	14
2.1- EVALUATION SITE	14
2.2- SURVEY	14
2.3- ADMINISTRATIVE PREPARATION OF THE SURVEY	15
2.4- TECHNICAL PREPARATION OF THE SURVEY	15
2.5- IMPLEMENTATION OF THE SURVEY IN THE FIELD	16
3- RESULTS	17
3.1- SAMPLE DESCRIPTION	17
3.2- ESTIMATION OF THE THERAPEUTIC COVERAGE INDICATORS	17
3.3- KNOWLEDGE, ATTITUDE AND PRACTICE OF THE POPULATION IN RELATION TO THE MANAGEMENT OF ONCHOCERCIASIS	20
4- INTERPRETATION OF THE RESULTS	26
5- LESSONS LEARNED	28
6- RECOMENDATIONS	29
7- CONCLUSION	30
8- REFERENCES	32
9- APPENDICES	
APPENDIX 1: TERMS OF REFERENCE (TOR)	
APPENDIX 2: HOUSEHOLD QUESTIONNAIRE	
APPENDIX 3 : KAP SURVEY QUESTIONNAIRE	
APPENDIX 4 CONCESSION NUMBERING FORM	43
APPENDIX 5 : HOUSEHOLD NUMBERING FORM	

Acknowledgement

This independent evaluation of the therapeutic coverage of the CDTI projects in the health districts of Sotouboua in Togo and Abomey in Benin was done on the request of Sightsavers management team. We thank specifically Dr. Midiaou BAH, Dr Boubacar DICKO, Mr. Fafonde KONDE and Mr. Mohamed Lamine YATTARA for thier permanent support in the field.

We extend our sincere appreciation to the National Programme of Onchocerciasis Control for Togo and Benin. We finally thank all the teams of the survey, agents, controllers and supervisors. The quality of work of the teams during this independent evaluation was remarkable.

This independent evaluation report of ivermectin treatment coverage in the CDTI projects of the health districts of Abomey (Benin) and Sotouboua (Togo) was prepared by Mr. Hermann BADOLO, Demographer at the MURAZ centre, Bobo-Dioulasso, Burkina Faso.

List of tables

Table 1 : Percentage of the population per district eligible for Ivermectin treatment during the last campaign..... 17

Table 2 : Reasons given by those eligible for treatment, who did not take treatment, during the last campaign..... 19

Table 3 : Percentage of household heads in each district that said they had heard about Onchocercosis before 20

Table 4 : Percentage of households in each district that had heard about the distribution campaign 22

Table 5 : Percentage of household heads in each district that took Ivermectin during the last campaign..... 23

List of figures

Figure 1: Presentation of the population by countries based on the district uptake of ivermectin in the last distribution campaign 18

Figure 2: Presentation of the population based on the uptake of albendazole in the last distribution campaign at Abomey in Benin 18

Figure 3: Presentation of the population that do not take albendazole based on the reasons for not taking albendazole during the last distribution campaign in the district of Sotouboua in Benin 19

Figure 4: Presentation of household heads by countries based on the district knowledge on onchocerciasis manifestation..... 21

Figure 5: Presentation of households by districts based on their knowledge of the mode onchocerciasis transmission..... 21

Figure 6 : Presentation of household by countries based on the district knowledge on the mode of onchocerciasis transmission 22

Figure 7: Presentation of household heads by districts based on the source of information for the last distribution campaign 23

Figure 8: Presentation of household heads by districts based on their reasons of ivermectin uptake in the last distribution campaign 24

Figure 9 : Presentation of household heads by districts based thier side effects after taking ivermectin in the last distribution campaign..... 25

List of appendices

APPENDIX 1: TERMS OF REFERENCE (TOR)
APPENDIX 2: HOUSEHOLD QUESTIONNAIRE
APPENDIX 3 : KAP SURVEY QUESTIONNAIRE
APPENDIX 4 : CONCESSION NUMBERING FORM 43
APPENDIX 5 : HOUSEHOLD NUMBERING FORM.....

List of abbreviations and acronyms

APOC	:	African Program for Onchocerciasis Control
ASC	:	Agent de Santé Communautaire Community Health Workers
CAP	:	Connaissance- Attitude et Pratiques Knowledge, Attitude and Practices (KAP)
CMFC	:	Charge microfilarienne de la communauté Community microfilarial load
DC	:	Distributeurs communautaires Community Distributors
DOTS	:	Directly Observed Treatment, Short-course
DRS	:	Directeur Régional de la Santé Regional Health Director
HKI	:	Helen Keller International
OCP	:	Onchocerciasis Control Programme
OMS	:	Organisation mondiale de la Santé World Health Organisation
MCD	:	Médecins Chef de District District Medical Superintendent
PEV	:	Programme Élargi de Vaccination Expanded Programme of Immunization
PNLO	:	Programme National de Lutte contre l'Onchocercose National Onchocerciasis Control Programme
TIDC	:	Traitement par l'Ivermectine sous Directives Communautaires Community Direct Treatment with Ivermectin
WHO	:	World Health Organization

Report Summary

The African Program for Onchocerciasis Control (APOC) in collaboration with the MURAZ centre initiated the development of a manual for independent evaluation of ivermectin treatment coverage. Based on this manual, Sightsavers with the MURAZ centre conducted an independent evaluation of the treatment of ivermectin treatment coverage and the knowledge, attitude and practices of the population in relation to onchocerciasis of the CDTI projects in the health districts of Abomey (Benin) and Sotouboua (Togo). This independent evaluation additionally estimates the treatment coverage of albendazole in the district of Abomey.

This evaluation covers (1) 1,599 persons of which 1,441 were eligible for ivermectin treatment in 300 households in Benin, and (2) 1,694 persons of which 1,433 were eligible for ivermectin treatment in 300 households in Togo. The results of this independent evaluation enabled the estimation of the treatment coverage rate of ivermectin to be 40% for the district of Abomey and 78.9% for the district of Sotouboua, with a confidence interval of 95% that is between 37.6% to 42.5% for the district of Abomey, and 76.8% to 80.8% for the district of Sotouboua. For albendazole, during the last treatment, the coverage rate was 40.1% for the district of Abomey with a confidence interval of 95% that is between 37.7% to 42.5%.

In the health districts of Abomey and Sotouboua, among 100 household heads 76 and 73 respectively had heard about onchocerciasis. Among them, a high proportion knew that onchocerciasis was transmitted through the bite of a small black fly (79.9% for Abomey and 43% for Sotouboua), and that mass treatment with ivermectin can reduce the risk of contracting the disease (59.3% in district of Sotouboua and 41% in the district of Abomey). It is in the district of Abomey (51.5%) that a high proportion of household heads stated that blindness of one or two eyes was a manifestation of onchocerciasis (31.2% in Sotouboua).

For the most recent distribution, household heads, respectively 40 and 89 had heard about the last distribution campaign of ivermectin. Among them, most were made aware by local administrative personnel (63.9% for Abomey and 42.2% for Sotouboua). The coverage rate of ivermectin treatment among household heads was in the same order. Among the household heads that took ivermectin, respectively 47.1% and 72%, stated that, they had didn't have any side effects in the health districts of Abomey and Sotouboua.

The results of the data analysis show a lack of sensitization among the population on onchocerciasis, its consequences, mode of transmission and prevention during the last distribution campaign. The survey highlighted that among the population that did not take ivermectin during the last campaign, the most common reason was that community drug distributors did not go to their homes or villages; particularly in the health district of Abomey (67.8%).

If the measure of therapeutic coverage is currently an achievement with this methodology, explaining why such a project is at such a level rather than another requires the coupling of the coverage evaluation with that of the functioning of the CDTI project. It was only possible to couple a Knowledge, Attitude and Practice survey of the population on onchocerciasis and that of the CDTI projects. The KAP surveys of the population do not capture fully the functionality of the project. Instead conducting a complete evaluation would help the people responsible for the elimination programme of onchocerciasis in the countries, an evaluation on the functionality of the CDTI projects at the place where the coverage survey of treatment with ivermectin was done is essential.

1- Introduction

1.1- Background and rationale of the independent evaluation

Onchocerciasis is a dermal filariasis that develops in the fabric of human subcutaneous called a nematode *Onchocerca volvulus* (Leuckart 1893). This wired vivipare emits millions of embryos or microfilariae that are responsible for the pathogenicity of the parasite (Montpellier and Lacroix 1919 Brumpt 1919). The latter is transmitted to humans by the bite of a female Diptera of the genus *Simulium* (Le Berre 1966).

Onchocerciasis or river blindness is a cumulative parasitic disease that affects rural communities (Le Berre 1966, Philippon 1978). It is a debilitating disease with a heavy social and economic burden (Nikiema 1994. Nikiema et al 1994). For decades, onchocerciasis has been a public health problem. International mobilization has enabled many countries to bring the disease under control (Anonymous 1985).

Onchocerciasis affects mainly small human rural communities due to the behaviour of the vector and the dilution of the parasite in the blood of the abundant human population (Le Berre 1966 Philippon 1977).

Onchocerciasis is called “river blindness” because of the eye injuries it causes that are the most advanced clinical manifestations, most significantly affecting coastal villages (Le Berre 1966, Prost, Rougemont, and Omar 1980, Gentilini and Richard-Lenoble 2012). The disease is mostly prevalent along rivers; there is the African popular adage (Mossi land): “the proximity of major rivers eats eyes” (Samba 1995).

In Africa, human onchocerciasis is mainly associated with *Simulium damnosum s.l.* and to a lesser extent in *Simulium naevei* group and the species *Simulium albivirgulatum* (Philippon and Le Berre 1978; Anonymous 1985).

Onchocerciasis is often moderate or asymptomatic (Anonymous 1985; Boussinesq et al. 1994). However, if the infestation is severe, there is an onset of clinical manifestations (or syndromes). Many authors (Anderson et al 1974a; Anderson et al 1974b; Thylefors and Brinkmann 1977; Prost 1980; Dadzie, Remme, Alley, et al 1990; Dadzie, Remme, Baker et al 1990) have already described the clinical picture of onchocerciasis. Actually three syndromes are observed: i) onchocercomas or onchocerciasis nodules of which the majority are found in the pelvic and rib cage, ii) skin lesions and iii) damaging of the eye.

Onchocerciasis is a very serious public health problem in Africa, with over 37 million people infected and millions suffering from debilitating skin disease, terrible itching, blurred vision and blindness. But for the last 20 years, the situation has improved significantly in most endemic areas due to community directed treatment with ivermectin.

Larviciding has been the main strategy used to control onchocerciasis by the World Health Organization Onchocerciasis Control Programme in West Africa. This programme handled the breeding sites of the vector with the insecticide used in

rotation, from 1974 to 1998 protecting 40 million people in 11 countries and avoiding 600,000 cases of blindness (Anonymous 1995). However, the ideal control strategy should tackle both the vector and the parasite (Connor 1978; Thylefors, Philippon, and Prost 1978).

The discovery of the anthelmintic activity of ivermectin gave the drug a place of choice in the fight against onchocerciasis which is currently the main indication (Anonymous 1995). Ivermectin is a microfilaricide without significant adverse effects (except in areas of high endemicity of Loa Loa). Ivermectin does not kill the adult worms of *onchocerca volvulus*, and most of them begin to produce microfilariae a few weeks after treatment, causing a rise of microfilarial charges

Thus, the major strategy applied by the African Onchocerciasis Control Programme (APOC) for the elimination of onchocerciasis in Africa was the annual ivermectin mass distribution by volunteers (CDDs) in high transmission risk communities. It is community directed treatment with ivermectin (Mectizan[®]) or CDTI (Bockarie et al. 2013). This DOTS (Directly Observed Treatment, Strategy) strategy means taking medication when directly observed by the community distributor. In 2012, there were 765 endemic districts and 703 co-endemic with river blindness and lymphatic filariasis. The number of people treated was 100.8 million, in 26 countries (APOC 2013). Now more than 120 CDTI projects are ongoing with over 250,000 community ivermectin distributors in over 150,000 villages (communities) in thirty countries in Africa (Hodgkin et al. 2007).

Studies in West Africa have shown that in the long term, not only the control of onchocerciasis as a public health problem will be possible, but its elimination will also be feasible in some endemic foci and under certain conditions (Diawara et al. 2009). This means that one of the main tasks of endemic countries is to determine when and where ivermectin treatment can be stopped without risk of resurgence of the infection. This requires a better understanding of ivermectin therapeutic coverage. In this context, APOC and the countries considered the therapeutic coverage data provided by CDTI projects. Also, considering the importance and delicacy of the decision to interrupt ivermectin treatment, it is essential to validate the temporal data of the therapeutic coverage. Indeed, repeated observations and regular field evaluations show difficulties in the therapeutic coverage monitoring system (Amazigo et al 2007. Brieger et al 2012.). The rapid epidemiological evaluations noted levels of treatment coverage sometimes below 45% in areas where community distribution of ivermectin records report is over 80% (Moussa Sow; Kafando & EAP, personal communication). But this should not discredit any community monitoring, because it is an indicator of community ownership (Amazigo et al. 2007).

Precise evaluation of CDTI coverage is necessary to understand coverage, seek out any difficulties and estimate the time and resources necessary for the elimination of onchocerciasis in areas concerned. It is widely agreed that if a coverage rate reaches 65% to 80% in a zone, the elimination of onchocerciasis could be achieved after fifteen years of CDTI if community microfilarial load (CMFL) is 10-30 microfilariae per biopsy before intervention. On the other hand, if the CMFL is 50 to 70mf / per biopsy, the elimination of the disease cannot be achieved until at the end of 20 to 25 years of CDTI (WHO / APOC, 2010). This means that CMFL plays a determinant role in treatment duration.

Thus and with a view to the elimination of onchocerciasis in 2020, it is necessary for onchocerciasis control programs to have more reliable estimates of the obtained therapeutic coverage in each ivermectin distribution target community.

To overcome these inefficiencies, APOC in collaboration with MURAZ Centre, initiated the development of an independent evaluation manual of ivermectin treatment coverage. On the basis of this manual, Sightsavers in collaboration with MURAZ Centre conducted an independent evaluation to assess the ivermectin treatment coverage and populations' attitudes, knowledge and practices related to onchocerciasis CDTI projects in the health districts of Abomey (Benin) and Sotouboua (Togo). This independent evaluation also assessed the albendazole treatment coverage rate in Abomey district.

1.2- The objectives of the independent evaluation

The overall objective of this evaluation is to help provide diagnostic information for the CDTI projects in the districts of Abomey (Benin) and Sotouboua (Togo) in order to strengthen their implementation and performance.

More specifically, this independent evaluation of the therapeutic coverage following the community ivermectin and albendazole distribution campaigns had three objectives:

- ✓ To estimate a reliable ivermectin therapeutic coverage rate to be compared with reported therapeutic coverage drawn from the community distributors records;
- ✓ To estimate a reliable albendazole treatment coverage to be compared with reported therapeutic coverage drawn from the community distributors records;
- ✓ To measure people's knowledge and behaviour in relation to CDTI projects in order to improve the community awareness and distribution activities of ivermectin for the elimination of onchocerciasis.

1.3- The expected outcomes of the independent evaluation

The expected outcomes included:

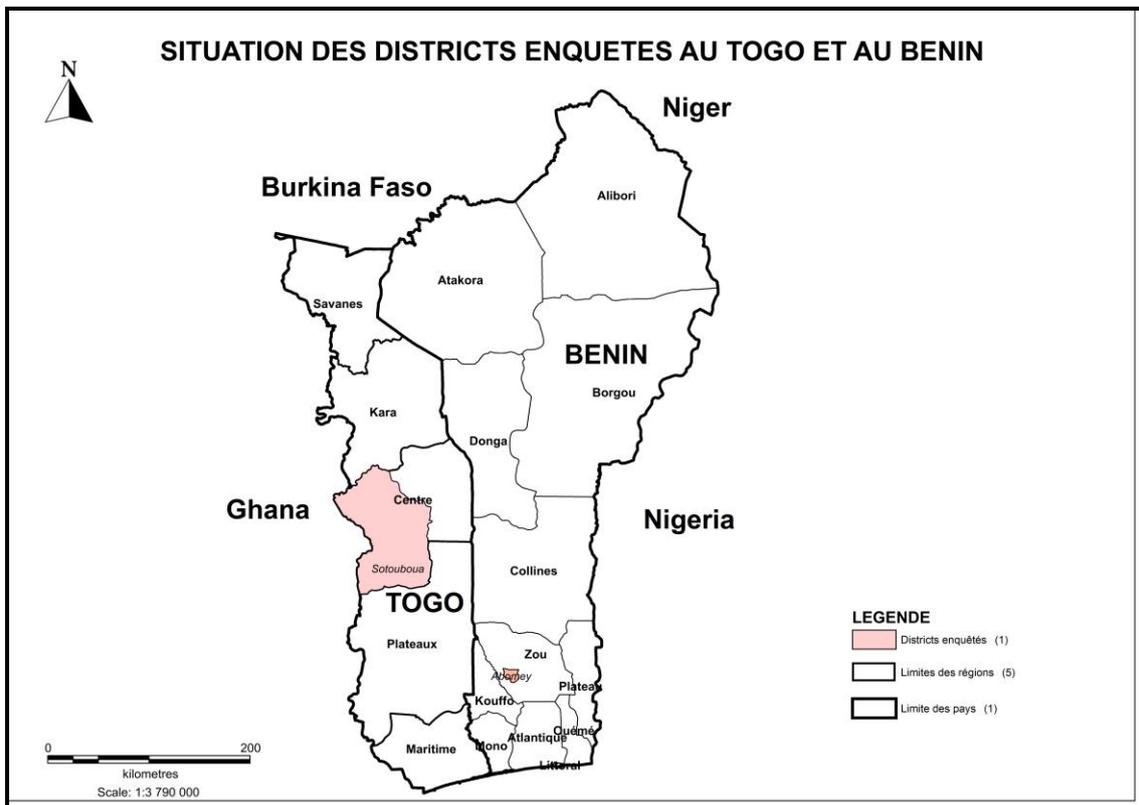
- ✓ A reliable estimate of ivermectin treatment coverage to compare with the administrative report data of therapeutic coverage collected from community distributors' registers.
- ✓ A reliable estimate of albendazole treatment coverage to compare with the administrative reports data of therapeutic coverage collected from the community distributors' registers.

- ✓ Measurement of knowledge and behaviours of the population in relation to the CDTI projects in order to improve on the awareness of activities and community sensitization on ivermectin distribution in order to eliminate onchocerciasis.

2- Materials and method

2.1- Evaluation site

The evaluation was conducted in the districts of Abomey in Bénin and Sotouboua in Togo, 30 villages were selected in each country using proportional probability sampling.

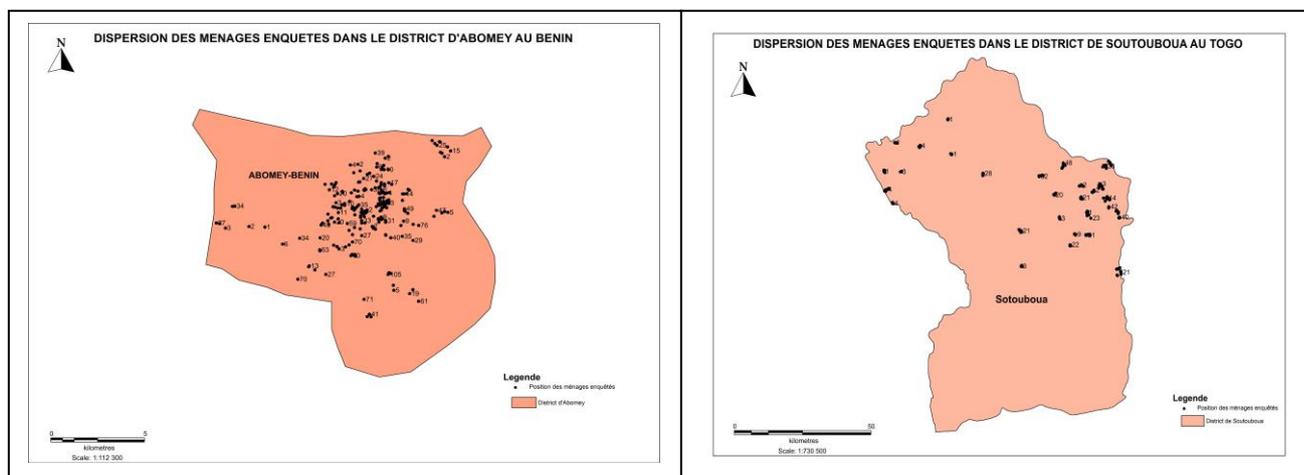


2.2- Survey design

The proposed study design was a cross-sectional survey sampling 300 household through random selection. The sample size to be surveyed was determined through a probability of 3 degrees with a sample size 30 x 10 x 1. The basis of the sample size constituted a list of all the villages (or section or community) covered by the CDTI projects of the two districts involved.

Initially, 30 villages were selected through proportional probability sampling to the size of each village treated in the intervention zones of the CDTI projects of Benin and Togo. For the second time, in each of 30 villages selected, after exhaustive listing of all the concessions habited, 10 concessions were selected systematically using systematic equal probability. Ultimately, in each concession selected, one household is selected through a draw after registering all households in a concession. In each household selected all the eligible people were surveyed face to face for the estimation of therapeutic coverage. All the household heads selected for the therapeutic coverage survey were interviewed to describe their knowledge, attitude and practice of onchocerciasis and CDTI projects.

Data collection tools consisted of concessions and household listing forms, a household questionnaire and a KAP questionnaire programmed on smartphones



2.3- Administrative preparation of the survey

In this evaluation, a steering committee was not formed as indicated in the manual. But Dr. Boubacar DICKO, Dr. Midiaou BAH and Mr. Fanfode KONDE of Sightsavers team played the role of orientation, supervision, control and validation of all the stages of the conception, the implementation survey and enabled the selection of the choice of the strategy (the site and the project to evaluate and the value of the evaluation).

A technical coordination team was constituted. This team was led and presided by Professor Soungalo TRAORE and assisted by Hermann BADOLO, Demographer in the Team Supporting Methodology and Training at the MURAZ Centre (EAMF). This team was supported by Dr. Midiaou BAH of Sightsavers and Mr. Mohamed Lamine YATTARA of Helen Keller International (HKI).

2.4- Technical planning of the survey

The technical coordination team proceeded with the technical planning of the survey. It finalized the different tools (data collection forms and the manual), budget and the financial resources required for the evaluation. This team also set the objectives to be obtained, did the sampling through the sampling technique indicated in the manual, made the choice of the tools and the technique to be used. For this evaluation, two types of tools were programmed in the smart phone, and used:

- ✓ A household questionnaire for the evaluation of the treatment coverage of ivermectin and albendazole was developed (Appendix 1). The questionnaire enabled the collection of data on age, sex, the uptake of ivermectin and

albendazole in the last treatment round. This tool was utilized for the collection of this information from all the individuals in the household.

- ✓ A KAP survey questionnaire (APPENDIX 2): In addition to the information collected from the household questionnaire, this tool also enabled the collection of information on knowledge, attitude and practices of household heads in relation to onchocerciasis and CDTI.

In addition to these collection tools, concession and household registration forms (Appendix 3 and 4) were used in the villages.

After the finalization of the tools and sample size determination, the team proceeded with the training of the agents, pre-testing of the tools, and uploading tools into smart phones.

2.5- Implementation of the survey in the field

The implementation of the activities began with the training of the survey agents and controllers, pre-testing of the tools and the finalization of the programming into smartphones. Following the training and finalization of the tools, the survey agents and controllers were constituted into three teams for each country and deployed in the field. Each team was composed of one controller and two survey agents; six survey agents and three controllers were mobilized for each country. Surveys were done over a period of ten days intensive field work, in the health district of Sotouboua on 29 October - 7 November 2015 and in the health district of Abomey from 2 - 11 November 2015. The survey team were accompanied in the field by a guiding team that comprised of two supervisors and the mission team.

The collection of the survey data for the independent evaluation of the treatment coverage of ivermectin under the community direct treatment with ivermectin was primarily done with two types of questionnaire programmed into smartphones.

3- Results

3.1- Sample description

This evaluation enabled, as indicated in table 1, the assessment of:

- ✓ 1,599 persons of which 1,441 (90.1%) were eligible for ivermectin treatment in 300 household in the health district of Abomey in Benin;
- ✓ 1,694 persons of which 1,433 (84.6%) were eligible for ivermectin treatment in 300 households in the health district of Sotouboua in Togo.

Table 1 : Percentage of the population per district eligible for Ivermectin treatment during the last campaign

Country	Health District	Persons eligible to treatment based on age				Total	
		Yes		No		Number	%
		Number	%	Number	%		
Benin	Abomey	1,441	90,1%	158	9,9%	1,599	100,0%
Togo	Sotouboua	1,433	84,6%	261	15,4%	1,694	100,0%

3.2- Estimation of the therapeutic coverage indicators

It was found that the CDTI strategy was utilized in the health district of Sotouboua, and in the district of Abomey ivermectin was distributed by campaign distribution.

➤ *Ivermectin treatment coverage*

Among 100 individuals, 60 and 21 did not take ivermectin in the last treatment round respectively Abomey in Benin and Sotouboua in Togo. During the last treatment round, the therapeutic coverage rate was 40% for the district of Abomey and 78.9% for the district of Sotouboua. In Abomey, 38% of treatments were administered under the supervision of CDDs and 2.1% administered un-supervised. In Sotouboua 77.5% of treatments were administered under the supervision of CDDs and 1.4% administered un-supervised (Figure 1). A confidence interval of 95% was between 37.6% and 42.5% for the district of Abomey, and 76.8% and 80.85% for the district of Sotouboua.

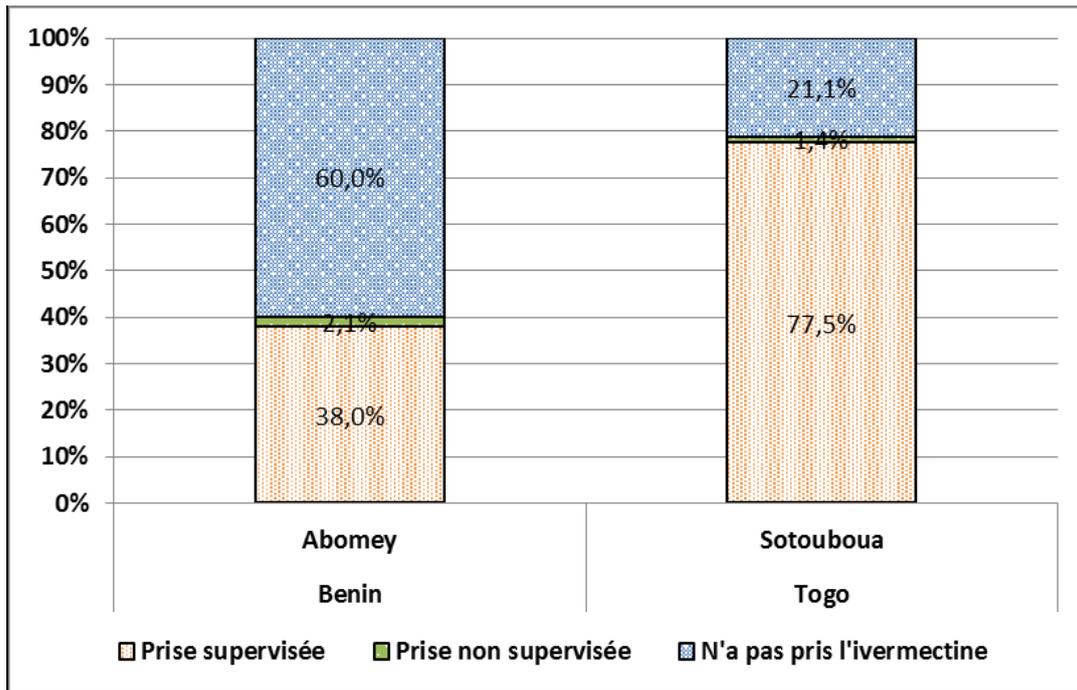


Figure 1: Presentation of the population by countries based on the district uptake of ivermectin in the last distribution campaign

➤ **Albendazole treatment coverage**

Regarding albendazole, in the last treatment round, the coverage rate was 40.1% for the district of Abomey (37.9% of treatments were administered supervised by CDDs, and 2.2% not supervised by CDDs) with a confidence interval of 95% that is between 37.7% and 42.5%. (Figure 2)

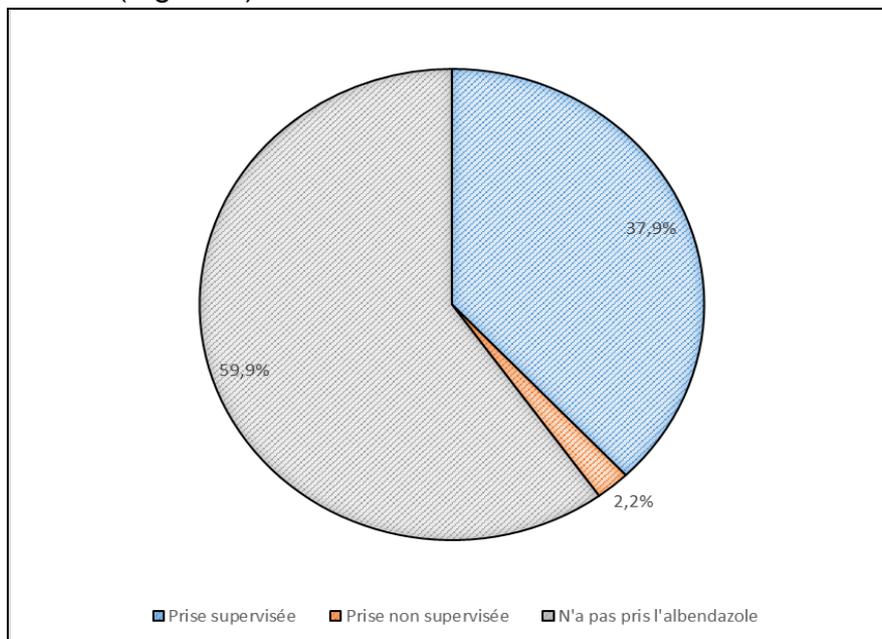


Figure 2: Presentation of the population based on the uptake of albendazole in the last distribution campaign at Abomey in Benin

➤ **Reasons for not taking ivermectin**

Among the individuals eligible for treatment that did not take ivermectin in the last treatment campaign in Abomey, Benin, 67.8% said they did not take ivermectin because the community distributors did not go to their homes or villages, and 26.4% were absent or away for work. In Sotouboua, 45.4% were absent or went for work or travels during the time the CDDs were distributing.

Table 2 : Reasons given by those eligible for treatment, who did not take treatment, during the last campaign

Country	Health District	Reasons for not taking ivermectin								Total	
		Refused	Unaware of MDA	Absent	Went for work, or travels	CDDs did not come	Pregnant	Sick	A* Other	Number	Percentage
Benin	Abomey	0,5%	2,9%	23,2%	3,2%	67,8%	0,6%	0,2%	1,5%	801	100,0%
Togo	Sotouboua	0,0%	0,0%	43,3%	2,1%	0,0%	23,7%	0,0%	30,9%	97	100,0%

➤ **The reason for not taking albendazole**

Regarding albendazole treatment, among the individuals eligible for treatment who did not take ivermectin during the last treatment campaign in Abomey, Benin, 67.6% said they did not take albendazole because the CDDs did not go to their homes or villages and 26.6% were absent or away for work or travel.

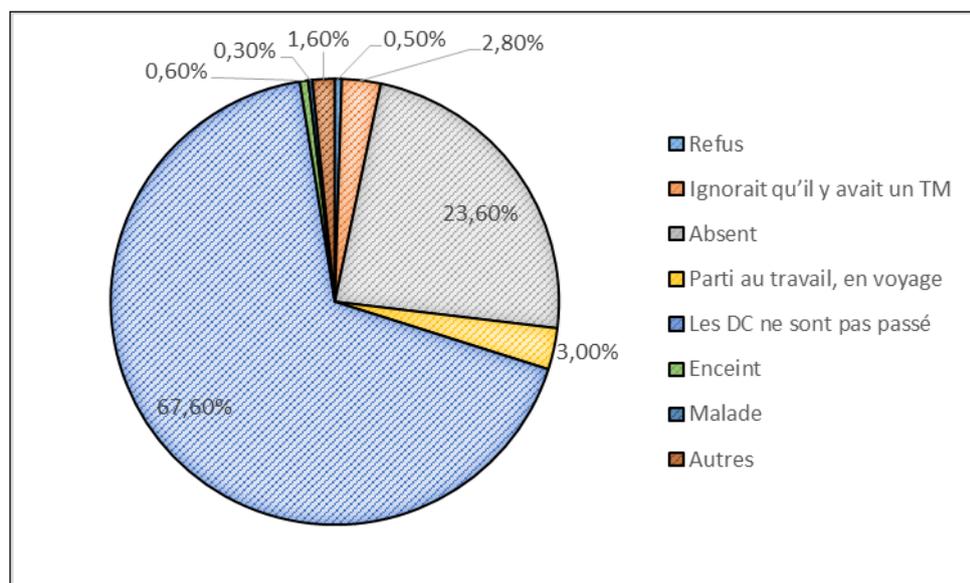


Figure 3 Presentation of the population that did not take albendazole based on the reasons for not taking albendazole during the last distribution campaign in the district of Sotouboua in Togo

3.3- Knowledge attitude and practices of the population in relation to the management of onchocerciasis

➤ Knowledge on onchocerciasis

As shown on table 4, among 100 household heads, 76% and 74% said they have heard about onchocerciasis, respectively for the health districts of Abomey in Togo and Sotouboua in Togo.

Table 3 : Percentage of household heads in each district that said they had heard about Onchocerciasis before

Countries	Health District	Awareness of onchocerciasis						Total	
		Yes		No		Dont know		Number	%
		Number	%	Number	%	Number	%		
Benin	Abomey	229	76,3%	69	23,0%	2	0,7%	300	100,0%
Togo	Sotouboua	221	73,7%	78	26,0%	1	0,3%	300	100,0%

➤ Knowledge on onchocerciasis manifestation

During the survey, household heads were asked if they knew about the manifestation of onchocerciasis. The information collected is presented in Figure 3. In the district of Abomey in Benin 52% of the household heads said blindness experienced in one or two eyes was a manifestation of onchocerciasis. This proportion was 31.2%, in the health district of Sotouboua in Togo.

36.7% and 8.1% of the household heads described a manifestation of onchocerciasis as thickening or depigmentation of the skin in the districts of Abomey and Sotouboua. 13.1% and 24.4% of household heads respectively in the health districts of Abomey and Sotouboua reported experiencing sizeable nodules under the skin.

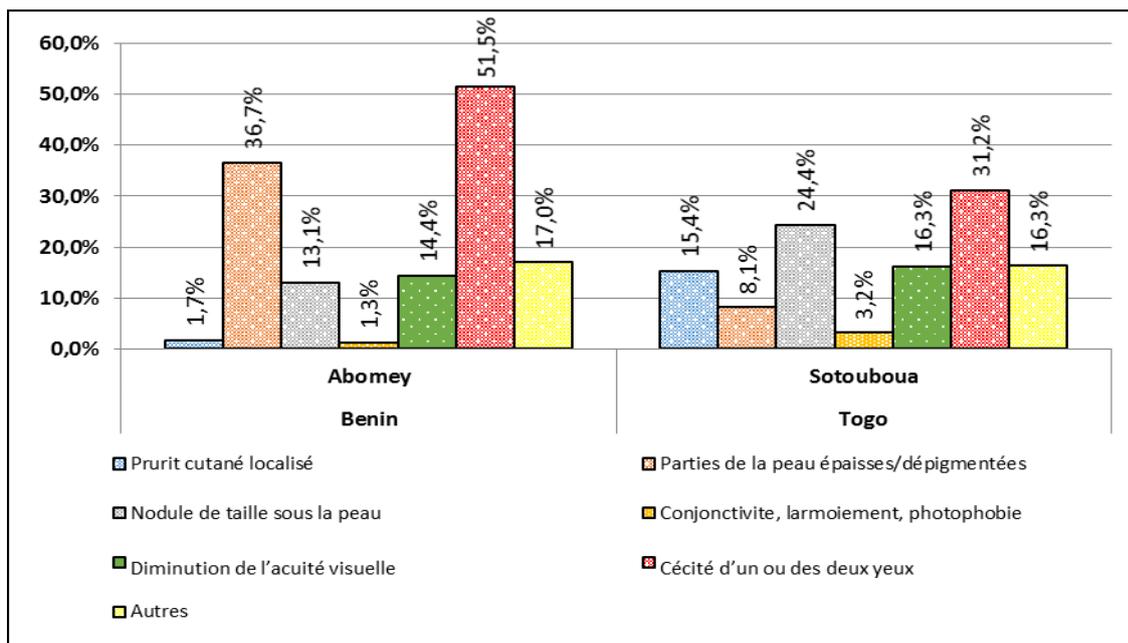


Figure 4: Presentation of household heads by countries based on the district knowledge on onchocerciasis manifestation

➤ **Knowledge on the mode of transmission**

The mode of transmission of onchocerciasis is often not known and misconception of the disease is common. During the survey, to evaluate the level of the correct knowledge on the transmission of onchocerciasis, multiple choice responses were given to the household heads. These results show that a high proportion of household heads know onchocerciasis is transmitted through the bite of the blackfly; 79.9% and 43.0% respectively in the health districts of Abomey in Benin and Sotouboua in Togo .

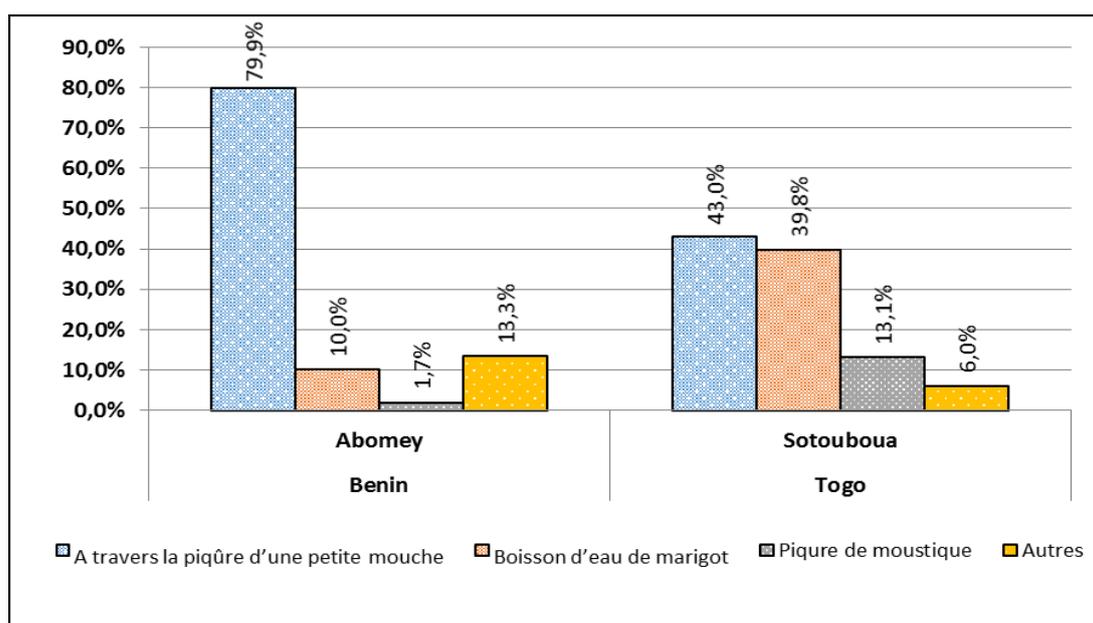


Figure 5 Presentation of households by districts based on their knowledge of the mode onchocerciasis transmission

➤ **Knowledge on the mode of prevention of onchocerciasis**

Knowledge on the means of prevention of onchocerciasis is essential for protection against the disease. Household heads were asked if they knew the mode of reducing the risk of contracting the disease. The information collected is presented in Figure 6. More than half of household heads in Sotouboua (59.3%) were aware that mass treatment with ivermectin can reduce the risk of contracting onchocerciasis. In Abomey 41.0% of household heads were aware of this strategy as a means of preventing the disease.

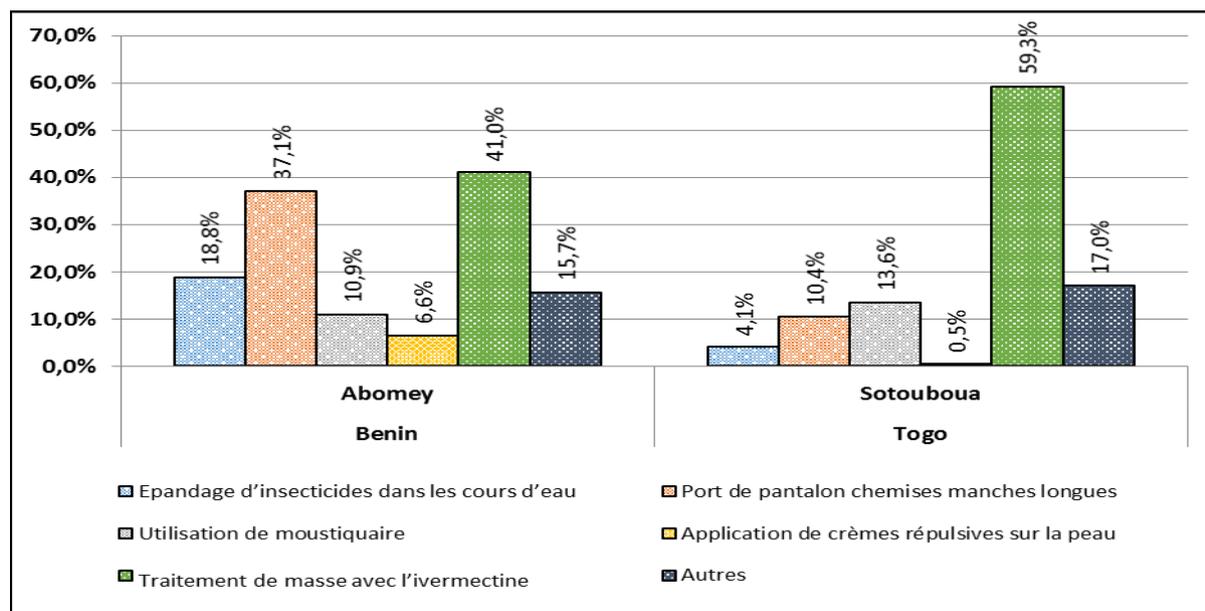


Figure 6 : Presentation of household by countries based on the district knowledge on the mode of onchocerciasis prevention

➤ **Knowledge on the campaign distribution**

The uptake of ivermectin in the last distribution campaign implies that the population must have heard about the campaign. To evaluate this, questions were asked to the household heads if they had heard about the last distribution campaign of ivermectin and the source of the information.

In the health districts of Abomey in Benin and Sotouboua in Togo, as seen in Table 4, respectively 39.7% and 89.3% of household heads heard about the ivermectin distribution in the last campaign.

Table 3 : Percentage of households in each district that had heard about the distribution campaign

Country	Health District	Heard about the distribution campaign						Total	
		Yes		No		Dont know		Number	%
		Number	%	Number	%	Number	%		
Benin	Abomey	119	39,7%	179	59,7%	2	0,7%	300	100,0%
Togo	Sotouboua	268	89,3%	30	10,0%	2	0,7%	300	100,0%

➤ **Source of information**

Among the household heads that had heard about the most recent distribution campaign, most of them heard about the distribution campaign through the local administrative persons (63.9% in Abomey and 42.2% in Sotouboua) and through community distributors (33.6% in Abomey and 28.7% in Sotouboua).

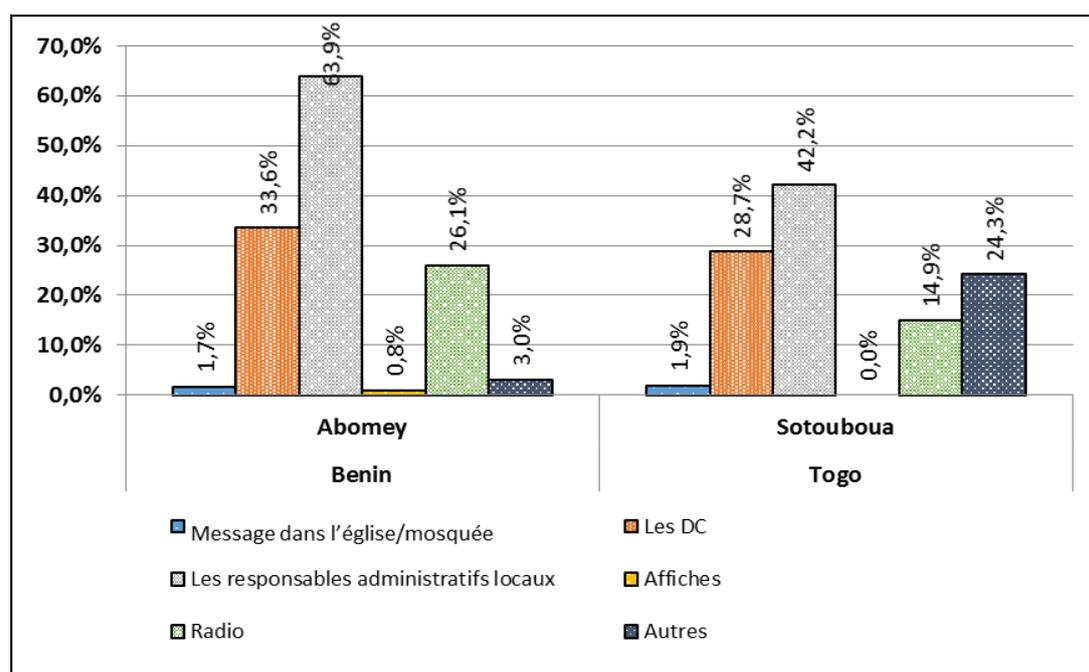


Figure 7 Presentation of household heads by districts based on the source of information for the last distribution campaign

➤ **Attitude and practices in relation to ivermectin treatment**

The treatment coverage rate of ivermectin among household heads was in the same order of magnitude as found in the treatment coverage rate of the general population. The proportions were 39.7% and 94.0% respectively in the health districts of Abomey in Benin and Sotouboua in Togo (Table 6).

Table 4 Percentage of household heads in each district that took Ivermectin during the last campaign

Country	Health District	Uptake of ivermectin in the last campaign						Total	
		Yes		No		Dont know		Number	%
		Number	%	Number	%	Number	%		
Benin	Abomey	119	39,7%	179	59,7%	2	0,7%	300	100,0%
Togo	Sotouboua	282	94,0%	18	6,0%	0	0,0%	300	100,0%

➤ **Reasons of uptake**

As shown in figure 7, among household heads that took ivermectin in the last campaign most of them said they took the treatment to avoid blindness (51.1% in Abomey and 44.7% in Sotouboua) or to eliminate blindness (35.3% health district of Abomey and 24.1% for the health district of Sotouboua) .

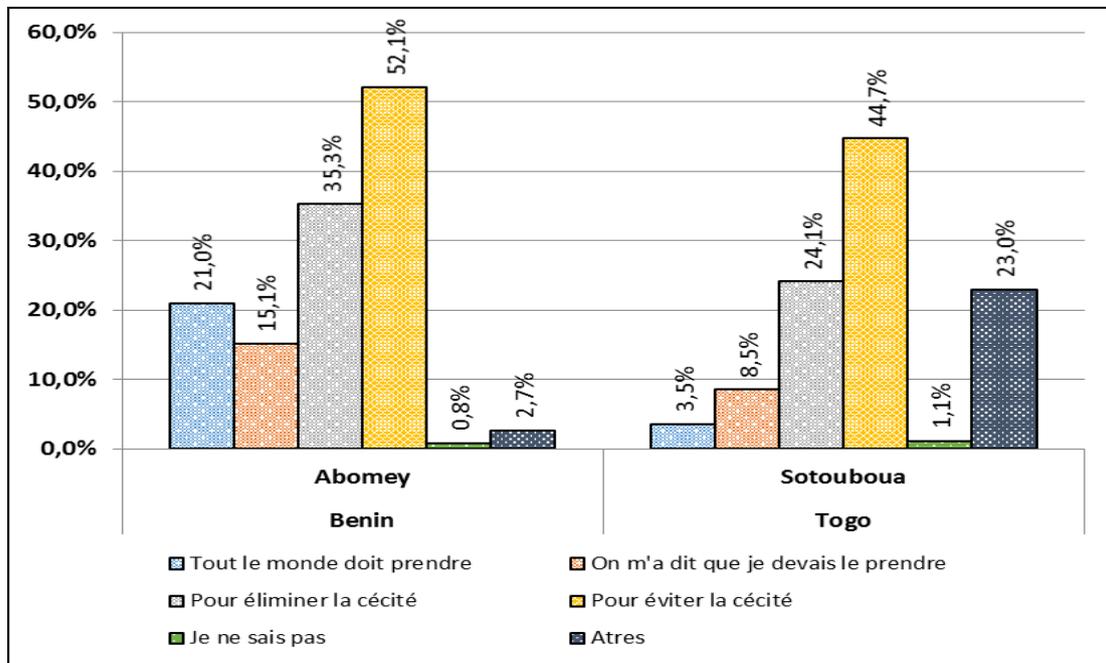


Figure 8 Presentation of household heads by districts based on their reasons of ivermectin uptake in the last distribution campaign

➤ **Side effects**

It was important to understand any side effects that household heads experienced after taking ivermectin. Among household heads that were treated with ivermectin during the last campaign 47.1% in Abomey and 72.0% in Sotouboua said they did not experience side effects.

According to Figure 9, itching and dizziness were cited as the most common side effects that household heads experienced after taking treatment in Sotouboua.

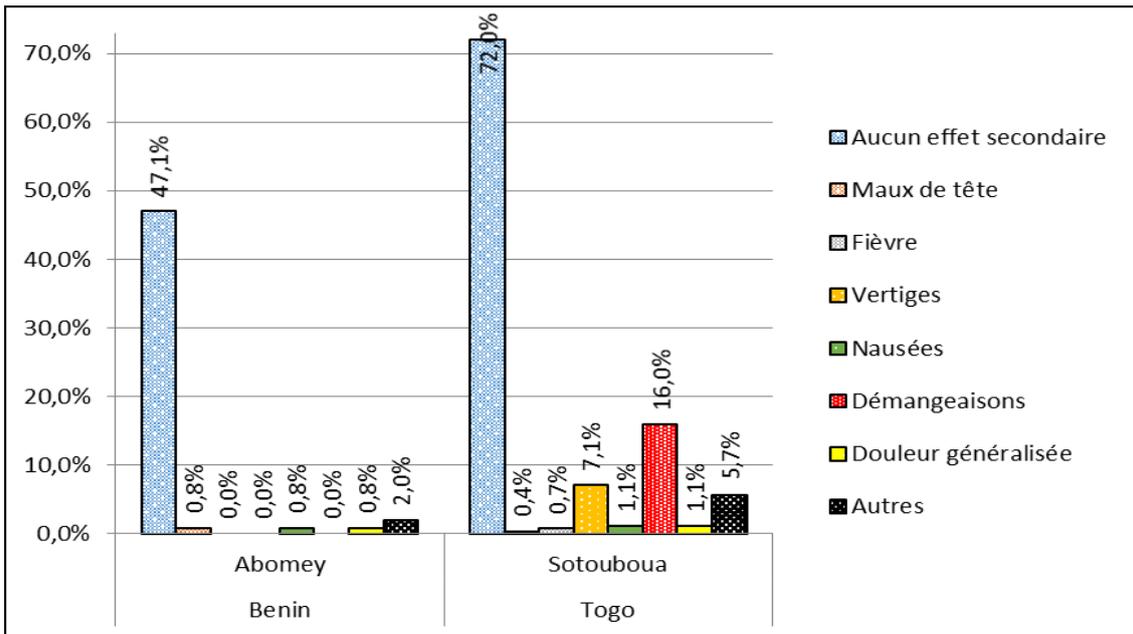


Figure 9 : Presentation of household heads by districts based thier side effects after taking ivermectin in the last distribution campaign

4- Interpretation of the results

This independent evaluation enables the estimation of the treatment coverage rate of ivermectin to be 40% for the health district of Abomey and 78.9% for the health district of Sotouboua. In Abomey, 38% of treatments were administered under the supervision of CDDs and 2.1% administered un-supervised. In Sotouboua 77.5% of treatments were administered under the supervision of CDDs and 1.4% administered un-supervised (Figure 1). A confidence interval of 95% was between 37.6% and 42.5% for the district of Abomey, and 76.8% and 80.85% for the district of Sotouboua.

Regarding albendazole, in the last treatment round, the coverage rate was 40.1% for the district of Abomey (37.9% of treatments were administered supervised by CDDs, and 2.2% not supervised by CDDs) with a confidence interval of 95% that is between 37.7% and 42.5%. (Figure 2).

The coverage rate of ivermectin treatment during the last campaign, was identified by this independent evaluation to be 40% [37.6% - 42.5%] and 78.9% [76.8% – 80.8%] respectively for the health district of Abomey and Sotouboua, as opposed to 85.7%, and 80.1% stated in the administrative report of community distributors. The level of therapeutic coverage of ivermectin collected from the administrative report of the CDDs for the district of Sotouboua is within the confidence interval of the rate estimated by the independent survey. The difference of the level of coverage is not statistically significant (CI 95%: 80.1% ; p=0,0000). In contrast, the therapeutic coverage rate of the administrative report of the CDDs for the district of Abomey was largely out of the confidence interval of the estimated rate of the independent survey, the difference of the level of the coverage was statistically significant (CI 95% ; 85.7% ; p=0.2161).

District	Percentage Evaluation	Percentage of CDDs report	Number	Test value	ICI 95% (P-value)
Abomey	40	85,7	1599	-52,2013822	0.2161
Sotouboua	78,9	80,1	1694	-1,2370725	0, 0000

- H0 : The therapeutic coverage rate of ivermectin from the independent evaluation is equal (or is not different) to the coverage rate from the report of the CDDs to that acceptability of 5%;
 - H1 : The therapeutic coverage rate of ivermectin from the independent evaluation is different from the coverage from the CDDs report to that acceptability of 5%

The absolute value of the test is inferior to 1.96 ($|-1,237| < 1,96$) for the health district of Sotouboua, HO is then true for the district. In contrary, the absolute value of the test is superior to 1.96 ($|-52,201| > 1,96$) for the health of Abomey, H1 is true for the district.

In the health district of Abomey, the KAP survey and the level of coverage rate obtained from the independent evaluation, explains not only the reasons for why some did not take the treatment, but also explains the low knowledge level of

onchocerciasis and the low awareness level about the campaign during the last mass distribution.

Indeed, in this district, 67.8% of those that do not take ivermectin in the last campaign said they did not take the medicine because the CDDs did not go to their homes or villages. That indicates certain CDDs have not been visiting all the households in their zones. This highlights a lack of a system of quality assurance, control and evaluation of the quality of the health information system at community level to estimate the coverage rate.

If we want to achieve a treatment coverage rate of ivermectin to pass 80%, it will be good for the population to have knowledge on onchocerciasis and greater sensitization before and during distribution campaign. The uptake of ivermectin during the last distribution campaign indicates that, the population must have heard about onchocerciasis. During this evaluation, the proportion of household heads that had not heard about the campaign was estimated to be 60.3%. This shows a lack of sensitization of the population on onchocerciasis, consequences, mode of transmission and prevention during the last treatment campaign.

5- Lessons learned

❖ During activity preparation

- ✓ This evaluation highlights the importance of the availability and close collaboration of the different stakeholders to validate the budget and taking into account all the aspects of this independent evaluation;
- ✓ This evaluation highlights the importance of debriefing sessions with the management teams of the programmes on field realities taking into account during the evaluation. At this point, logistics for training and survey (vehicle, training tools, reproduction of tools, kits for agents) and sampling can also be reviewed.

❖ After data analysis

- ✓ Data analysis shows lack of sensitization of the population on onchocerciasis in the last campaign especially in the health district of Abomey.
- ✓ Among the population that did not take ivermectin during the last treatment campaign, the primary reason was community distributors not going to their homes and village, particularly in the health district of Abomey (67.8%).

6- Recommendations

During this evaluation, some difficulties occurred in the distribution of ivermectin. For better consideration of community implication, the recommendations are as follows:

❖ In terms of implementing an independent evaluation

- ✓ Make budget available and ensure close collaboration of key stakeholders.
- ✓ Have a debriefing session day with the programmes management team members. During this, logistics for training and surveys (vehicles, training tools, reproduction of tools, kits for agents) and sampling can be reviewed.

❖ In terms of improving the functioning of CDTI

- ✓ Sensitize the entire population on onchocerciasis, consequences, mode of transmission and prevention. Ensure strong good sensitization of the population before and during each mass distribution campaign of ivermectin.
- ✓ Further train all community distributors on onchocerciasis, consequences, mode of transmission and prevention and the distribution procedures, so in turn, the right messages will be transmitted to the population.
- ✓ As seen in the differences between the coverage rate of the independent evaluation and that of the reports of the CDDs in Abomey (where ivermectin was distributed through a campaign mechanism), it could be advisable to adopt the CDTI strategy.
- ✓ It could be advisable to take into consideration project operations in the next evaluation. If the therapeutic coverage is currently an achievement with this methodology, explaining why this project is at this level rather than another necessitating the coupling of the independent evaluation with that of the operations of the project.

7- Conclusion

This independent evaluation of the treatment coverage of ivermectin for the CDTI projects in the health districts of Abomey (Benin) and Sotouboua (Togo) had three important objectives:

- ✓ To provide a reliable estimate of ivermectin treatment coverage to be compared with the administrative reports data of therapeutic coverage collected from community distributors' registers.
- ✓ To provide a reliable estimate of albendazole treatment coverage to be compared with the data of the therapeutic coverage collected from the registers of CDDs in relation lymphatic filariasis.
- ✓ To measure the knowledge and behaviour of the population in relation to CDTI projects in order to improve on the activities of sensitization and community distributors of ivermectin in the view of eliminating onchocerciasis.

This evaluation enabled us to assess (1) 1,599 persons in which 1,441 were eligible ivermectin treatment in 300 households in Benin, and (2) 1,694 persons in which 1,433 were eligible for ivermectin treatment in 300 households in Togo. The survey took place over 10 days of intensive work, involving 12 survey agents and 6 controllers to survey all these individuals.

This independent evaluation enabled the estimation of the treatment coverage rate of ivermectin to be 40% for the health district of Abomey and 78.9% for the health district of Sotouboua. In Abomey, 38% of treatments were administered under the supervision of CDDs and 2.1% administered un-supervised. In Sotouboua 77.5% of treatments were administered under the supervision of CDDs and 1.4% administered un-supervised (Figure 1). A confidence interval of 95% was between 37.6% and 42.5% for the district of Abomey, and 76.8% and 80.85% for the district of Sotouboua.

Regarding albendazole, in the last treatment round, the coverage rate was 40.1% for the district of Abomey (37.9% of treatments were administered supervised by CDDs, and 2.2% not supervised by CDDs) with a confidence interval of 95% that is between 37.7% and 42.5%. (Figure 2).

In the health districts of Abomey and Sotouboua, among 100 household heads, respectively 76 and 73 said they had heard about onchocerciasis. Among those that had already heard about the disease, it is in the health district of Abomey (51.5%) that a very high proportion of household heads said blindness of one or two eyes is a manifestation of onchocerciasis. This proportion was 31.2% in the health district of Sotouboua.

In the health districts of Abomey and Sotouboua, among 100 household heads 76 and 73 respectively had heard about onchocerciasis. Among them, a high proportion knew that onchocerciasis was transmitted through the bite of a small black fly (79.9% for Abomey and 43% for Sotouboua), and that mass treatment with ivermectin can reduce the risk of contracting the disease (59.3% in district of Sotouboua and 41% in the district of Abomey). It is in the district of Abomey (51.5%) that a high proportion of household heads stated that blindness of one or two eyes was a manifestation of onchocerciasis (31.2% in Sotouboua).

Regarding the last distribution campaign, in the entire health districts of Abomey and Sotouboua, among 100 household heads, respectively 40 and 89 heard about the mass distribution campaign of ivermectine. Among the household heads that heard about the last distribution campaign, most of them heard about the distribution campaign through the local administrative persons (63.9% for the health district of Abomey and 42.2% for the health district of Sotouboua)

The treatment coverage rate of ivermectin among households was in the same order of magnitude as what was found in the general population. Among 100 household heads in the health districts of Abomey and Sotouboua, respectively 40 and 94 said they took ivermectin in the last distribution campaign. Among the households that were treated with ivermectin in the last campaign respectively 47.1% and 72% said they do not experience side effects in the health district of Abomey and Sotouboua.

If the measure of the therapeutic coverage is currently an achievement with this methodology, explaining why such a project is at such a level rather than another requiring the coupling of the coverage evaluation with that of the operations of the CDTI project. It was only possible to couple a Knowledge, Attitude and Practice. Survey of the population on onchocerciasis and that of the CDTI projects. The KAP surveys of the population do not captures totally about the operations of the project. Instead conduct complete evaluation that helps the people responsible for the elimination programme of onchocerciasis in the countries, an evaluation on the operations of the CDTI projects at the place where the coverage survey of treatment with ivermectin was done is essential.

8- References

- Amazigo, U., J. Okeibunor, V. Matovu, H. Zoure, J. Bump, et A. Seketeli. 2007. « Performance of predictors: evaluating sustainability in community-directed treatment projects of the African programme for onchocerciasis control ». *Soc Sci Med* 64 (10): 2070- 82. doi:10.1016/j.socscimed.2007.01.018.
- Anderson, J., H. Fuglsang, P. J. Hamilton, et T. F. de Marshall. 1974a. « Studies on onchocerciasis in the United Cameroon Republic. I. Comparison of populations with and without *Onchocerca volvulus* ». *Trans R Soc Trop Med Hyg* 68 (3): 190- 208.
- . 1974b. « Studies on onchocerciasis in the United Cameroon Republic. II. Comparison of onchocerciasis in rain-forest and Sudan-savanna ». *Trans R Soc Trop Med Hyg* 68 (3): 209- 22.
- Anonyme. 1985. « Dix ans de lutte contre l'onchocercose en Afrique de l'Ouest. Bilan des activités du Programme de lutte contre l'onchocercose dans la région du bassin de la Volta ». OMSIOCPI84.3. Geneve.
- . 1995. « OCP (1974-1994) L'onchocercose et la lutte anti-simulidienne ». Rapport technique 852.
- APOC. 2013. « African Programme for Onchocerciasis Control: meeting of national onchocerciasis task forces, September 2013 ». *Weekly epidemiological record* 13 (50). http://cdrwww.who.int/apoc/publications/reports/wer8850_NOTFs2013.pdf.
- Bockarie, M. J., L. A. Kelly-Hope, M. Rebollo, et D. H. Molyneux. 2013. « Preventive chemotherapy as a strategy for elimination of neglected tropical parasitic diseases: endgame challenges ». *Philos Trans R Soc Lond B Biol Sci* 368 (1623): 20120144. doi:10.1098/rstb.2012.0144.
- Boussinesq, M., J. Prod'hon, N. J. Villamizar, G. F. Medley, et R. M. Anderson. 1994. « Density-dependent processes in the transmission of human onchocerciasis: intensity of microfilariae in the skin and their uptake by the simuliid host ». *Parasitology* 108 (01): 115- 27.
- Brieger, W. R., J. C. Okeibunor, A. O. Abiose, R. Ndyomugenyi, S. Wanji, E. Elhassan, et U. V. Amazigo. 2012. « Characteristics of persons who complied with and failed to comply with annual ivermectin treatment ». *Trop Med Int Health* 17 (7): 920- 30. doi:10.1111/j.1365-3156.2012.03007.x.
- Brumpt, Emile. 1919. « Une nouvelle filaire pathogène parasite de l'homme (*Onchocerca caecutiens* n. sp.) ». *Bull Soc Path Exot* 12: 464- 73.
- Connor, D. H. 1978. « Onchocercal dermatitis-current concepts of pathogenesis ». *Southeast Asian J Trop Med Public Health* 9 (2): 209- 14.
- Dadzie, K. Y., J. Remme, E. S. Alley, et G. de Sole. 1990. « Changes in ocular onchocerciasis four and twelve months after community-based treatment with ivermectin in a holoendemic onchocerciasis focus ». *Trans R Soc Trop Med Hyg* 84 (1): 103- 8.
- Dadzie, K. Y., J. Remme, R. H. Baker, A. Rolland, et B. Thylefors. 1990. « Ocular onchocerciasis and intensity of infection in the community. III. West African

- rainforest foci of the vector *Simulium sanctipauli* ». *Trop Med Parasitol* 41 (4): 376- 82.
- Diawara, L., M. O. Traore, A. Badji, Y. Bissan, K. Doumbia, et others. 2009. « Feasibility of Onchocerciasis Elimination with Ivermectin Treatment in Endemic Foci in ». http://wwwlive.who.int/entity/tdr/news/documents/oncho_elimination_PLOS.pdf
- Gentilini, M., et D. Richard-Lenoble. 2012. « Onchocercose ». In *Médecine Tropicale*, édité par M. Gentilini, E. Caumes, M. Danis, D. Richard-Lenoble, P. Bégué, J-P. Touze, et D. Kerouédan, 6ème éd., 338- 48. Paris: Lavoisier.
- Hodgkin, C., D. H. Molyneux, A. Abiose, B. Philippon, M. R. Reich, J. H. Remme, B. Thylefors, M. Traore, et K. Grepin. 2007. « The future of onchocerciasis control in Africa ». *PLoS Negl Trop Dis* 1 (1): e74. doi:10.1371/journal.pntd.0000074.
- Le Berre, René. 1966. « Les problèmes entomologiques actuels de l'onchocercose au sein de l'OCCGE ». <http://www.documentation.ird.fr/hor/fdi:10899>.
- LEUCKART, WGFR. 1893. « Disease of the skin in tropical climates ». présenté à Trans 7th Congr Hyg Et Demog.
- Montpellier, J., et A. Lacroix. 1919. « Un cas de teigne tondante, due au *Microsporum lanosum*, rencontré à Alger ». *Bull. Soc. franç. de dermat. et syphil*, 202- 5.
- NIKIEMA, E. 1994. « Développement socio-économique dans les zones libérées de l'onchocercose et perspectives au Burkina Faso ». Document interne de travail.
- NIKIEMA, E, J. Lewis, M.S PALE, et M DIARRA. 1994. « La gestion des terroirs comme stratégie de développement dans les zones libérées de l'onchocercose ». présenté à Réunion ministérielle sur le peuplement et le développement dans l'aire du Programme de lutte contre l'onchocercose, février.
- Philippon, B. 1977. *A study of the transmission of Onchocerca volvulus by Simulium damnosum in tropical Africa*. <http://www.cabdirect.org/abstracts/19782900675.html>.
- Philippon, B. 1978. « L'onchocercose en Afrique de l'Ouest ». *Initiation Orstom*, n° 38.
- Philippon, B., et R. Le Berre. 1978. « [Control of vectors of human onchocerciasis in intertropical Africa (author's transl)] ». *Med Trop (Mars)* 38 (6): 667- 75.
- Prost, A. 1980. « [The different types of human onchocerciasis in west Africa (author's transl)] ». *Ann Parasitol Hum Comp* 55 (2): 239- 45.
- Prost, A., A. Rougemont, et M. S. Omar. 1980. « [Epidemiological, clinical and biological characters of savanna and forest onchocerciasis in west Africa.-- Critical review and new data (author's transl)] ». *Ann Parasitol Hum Comp* 55 (3): 347- 55.

- Samba, Ebrahim Malick. 1995. « Le programme de lutte contre l'onchocercose en Afrique de l'Ouest: un exemple de bonne gestion de la santé publique ». <http://apps.who.int/iris/handle/10665/37630>.
- Thylefors, B., et U. K. Brinkmann. 1977. « The microfilarial load in the anterior segment of the eye. A parameter of intensity of onchocerciasis ». *Bull World Health Organ* 55 (6): 731- 37.
- Thylefors, B., B. Philippon, et A. Prost. 1978. « Transmission potentials of *Onchocerca volvulus* and the associated intensity of onchocerciasis in a Sudan-savanna area ». *Tropenmed Parasitol* 29 (3): 346- 54.
- WHO/APOC. 2010. *Cadre conceptuel et opérationnel de l'élimination de l'onchocercose par le traitement à l'ivermectine*. Vol. WHO/APOC/MG/10.1. World Health Organization.

Annex 2 - Household survey

Independent evaluation of the therapeutic coverage of treatment with Ivermectin under Community Direct Treatment with Ivermectin (CDTI)

Household questionnaire

Date : /__ /__ /__ / Country : _____ /__ / District of : _____ /__ / Village: _____ /__ /

N° of concession /__ /__ /__ / N° of the household: /__ /__ / Name of the interviewer: _____ Supervisor's name: _____

		Relationship with Head of Household <i>(Circle the appropriate code)</i>	Sex? <i>(circle the corresponding code)</i>	Age	Person eligible for treatment according to age? (≥ 5 Yrs.)	Did they take Ivermectin during the last treatment campaign?	Did they take Albendazole during the last treatment campaign?	Reasons why they did not take the dose <i>(Circle the appropriate code)</i>
N°	Named of surveyed/participant	1 Head of Household/husband/wife 3 Son/daughter 4 Brother/ Sister 5 Father/Mother 6 Grandson/Daughter 7 Nephew/Niece 8 Uncle / Aunt 9 Other relative 0 unrelated	1. Male 2. Female		1. Yes 2. No If not « 2 », next person If yes go to question A	1. Supervised taking 2. Non-supervised taking 3. No 4. Do not know / no data If 1 or 2 or 4, go to the next person If 1 or 2 or 4, go to the next person	1. Supervised taking 2. Unsupervised taking 3. No 4. Don't knows /no data If 1 or 2 or 4, move to the next person If 3, go to question A8	1. Refusal 2. Unaware that there was a MDA 3. Absent 4. Work, travel 5. Has not paid 6. The volunteer CDD did not come 7. Pregnant 8. Sick 9. Other:
A1	A2	A3	A4	A5	A6	A7	A8	
1		1 2 3 4 5 6 7 8 9 0	1 2	/__ /__	1 2	1 2 3 4	1 2 3 4 5 6 7 8 9	
2		1 2 3 4 5 6 7 8 9 0	1 2	/__ /__	1 2	1 2 3 4	1 2 3 4 5 6 7 8 9	
3		1 2 3 4 5 6 7 8 9 0	1 2	/__ /__	1 2	1 2 3 4	1 2 3 4 5 6 7 8 9	
4		1 2 3 4 5 6 7 8 9 0	1 2	/__ /__	1 2	1 2 3 4	1 2 3 4 5 6 7 8 9	
5		1 2 3 4 5 6 7 8 9 0	1 2	/__ /__	1 2	1 2 3	1 2 3 4 5 6 7	

				/		4		8 9
6		1 2 3 4 5 6 7 8 9 0	1 2	/ _ / _	1 2	1 2 3 4		1 2 3 4 5 6 7 8 9
7		1 2 3 4 5 6 7 8 9 0	1 2	/ _ / _	1 2	1 2 3 4		1 2 3 4 5 6 7 8 9
8		1 2 3 4 5 6 7 8 9 0	1 2	/ _ / _	1 2	1 2 3 4		1 2 3 4 5 6 7 8 9
9		1 2 3 4 5 6 7 8 9 0	1 2	/ _ / _	1 2	1 2 3 4		1 2 3 4 5 6 7 8 9
10		1 2 3 4 5 6 7 8 9 0	1 2	/ _ / _	1 2	1 2 3 4		1 2 3 4 5 6 7 8 9

Appendix 3: Questionnaire for the KAP survey

Independent evaluation of the Treatment Coverage with Ivermectin under Community Direct Treatment with Ivermectin (CDTI)
Questionnaire for the KAP survey

Date of the interview: |_|_|||_|_| 20

Name of the interviewer: _____

Name of the supervisor: _____

1 - IDENTIFICATION

N°	Topics	LABELS / terms	CODIFICATION
I1	District :	_____	_ _ _
I2	Village	_____	_ _ _
I2a	Concession Number	_____	_ _ _ _
I3	Household Number	_____	_ _ _
I4	Name of household head	_____	
I5	Contact of the respondent	_____	_ _ _

2 – socio- economic status

N°	Topics	LABELS / terms	CODIFICATION
S1	Age of respondent	Over age	_ _ _
S2	Gender responsive	Male = 1 Female= 2	Enter the code _
S3	Marital status of respondent	Single = 1 Marriage monogamous = 2 Married polygamous = 3 Divorced (and) / separated (e) = 4 Widow (er) = 5	Enter the code
S4	Educational level of respondent	None = 0 Primary = 1 Secondary = 2 Superior = 3 Do not know = 4 Other (specify):=5 _____ Refusal = 9	Enter the code _
S5	Transportation means of respondent	Car Motorbike Bike Other (s) to be specified): _____	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No _ _ _

3. Knowledge about onchocerciasis

N°	Topics	LABELS / terms	CODIFICATION
O1	Have you heard about onchocerciasis?	Yes = 1 No = 2 (go to section 4) Do not know = 3 (go to Section 4) Refusal = 9 (go to section 4)	Enter the code _
O2	Are you worried that you may contracted onchocerciasis?	Yes= 1 No = 2	Enter the code _

N°	Topics	LABELS / terms	CODIFICATION
		Do not know = 3 Refusal = 9	
O3	What are the manifestations of onchocerciasis?	Localized cutaneous pruritus Parts of the thick skin, depigmented Nodule size under the skin. Conjunctivitis (watery eyes, photophobia) Decreased visual acuity Blindness in one or both eyes Other (s) to be specified)_	Enter "1" or "2" in the boxes depending on the answer); 1 = Yes, 2 = No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
O4	How can you contract onchocerciasis?	Through the bite of a small black fly Drink water from creek Mosquito bite Other (s) to be specified	Enter "1" or "2" in the boxes depending on the answers); 1 = Yes, 2 = No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
O5	What can we do to prevent river blindness?	Spreading insecticides in rivers Wearing long-sleeved shirts pants Using mosquito Application of repellents on the skin Mass treatment with ivermectin Other (specify) _____	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

4. Knowledge of the distribution campaign

N°	Topics	RESPONSES AND CODES	CODIFICATION
C1	Have you heard of the latest ivermectin distribution campaign?	Yes = 1 No = 2 Do not know = 3 Refusal = 9	Enter the code <input type="checkbox"/>
C2	How did you hear about the campaign distribution?	Message in the church / mosque DC The local administrative officials Posters Radio Other (s) to be specified) :	Enter "1" or "2" in the boxes according to the answer) ; 1 = Yes, 2 = No <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
C3	After the distribution campaign, have you heard about the number of people in your community that were treated?	Yes = 1 No = 2 Do not know = 3 Refusal = 9	Enter the code <input type="checkbox"/>
C4	Did you take the medication during the last distribution campaign?	Yes = 1 (go to C4b) No = 2 (go to C4a) Do not know = 3 Refusal = 9	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No <input type="checkbox"/>

N°	Topics	RESPONSES AND CODES	CODIFICATION
C4a	Why did you not take the medication during this distribution campaign?	I did not know I had to take these drugs I was told that I could not take these drugs I was pregnant I was out of town I was sick I did not take this medicine This medicine make me sick I do not know Other (specify): _____	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No _ _
C4b	Why did you decide to take the medication during this distribution campaign?	Everyone must take it I was told that I had to take it To eliminate blindness To prevent blindness I do not know Other (specify) : _____	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No _ _ _ _ _
C5a	What side effects did you have when you took this medication	No side effects Headache Fever Dizziness Nausea Itching Widespread pain I do not know Other (Precise) : _____	_ _
C6	Is there anything you can tell us about what people tell you about the distributors of these medicines?	Yes = 1 (go to C7a) No = 2 (end of the questionnaire) Do not know = 3 Refusal = 9	Enter the code _
C6a	What feedback do you have?	Distributors were not available to answer questions Distributors were unable to answer questions Distributors were friendly Distributors have answered the questions Distributors have been helpful I do not know Other (please specify) _____	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No No _ _ _ _ _ _
C7	Is there anything you can tell us about those who distribute these medicines?	Yes = 1 (go to C7a) No = 2 (end of the questionnaire) Do not know = 3 Refusal = 9	Enter the code _
C7a	What have you to say about those who distribute these drugs?	Distributors were not available to answer questions Retailers were unable to answer questions Distributors were friendly	Enter "1" or "2" in the boxes depending on the response); 1 = Yes, 2 = No _ _

N°	Topics	RESPONSES AND CODES	CODIFICATION
		Distributors have responded to questions Distributors have been helpful I do not know Other (specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Annexe 4 : Concessions enumeration form

Independent evaluation of the therapeutic coverage of Community Directed Treatment with Ivermectin (CDTI)

Concessions enumeration form

Date: /__/__/__/ Country : /__/ District of : _____ / __/__/ out of /__/__/ pages

Page /_0_1/__/

Name of the village: _____ N°: _____ /__/__/		Surveyor's name: _____		
End of enumeration date /__/__/__/		Controller's name : _____		
N° of the concession	Surname and given name of the head of the Concession	Sex of the head of concession	Number of households in the concession	Observations
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	
/__/__/			/__/__/	

Annexe : Household enumeration form

Independent evaluation of the therapeutic coverage of Community Directed Treatment with Ivermectin (CDTI)

Household enumeration form

Date: /__/_/___/ Country : /__/_/ District of : _____ / __/_/ /
 out of /__/_/ pages

Page /_0_1/_/

N° of the concession : /__/_/___/	Name of the head of the concession : _____
Name of the surveyor: _____	Name of the Controller : _____

N° du ménage	Surname and given name of the head of the household	Sex the head of the household	Number of people in the household	Observations
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	
/__/_/			/__/_/	