# REPORT OF THE THIRD MEETING OF THE WHO **ONCHOCERCIASIS** TECHNICAL ADVISORY SUBGROUP

GENEVA, 26-28 FEBRUARY 2019



# Report of the Third Meeting of the WHO Onchocerciasis Technical Advisory Subgroup

Geneva, 26–28 February 2019



Report of the third meeting of the WHO Onchocerciasis Technical Advisory Subgroup, Geneva, Switzerland, 26-28 February 2019

ISBN 978-92-4-000663-8 (electronic version) ISBN 978-92-4-000664-5 (print version)

#### © World Health Organization 2020

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO;<u>https://creativecommons.org/</u><u>licenses/by-nc-sa/3.0/igo</u>).

Under the terms of this licence, you may copy, redistribute and adapt the work for noncommercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

**Suggested citation**. Report of the Third Meeting of the WHO Onchocerciasis Technical Advisory Subgroup, Geneva, 26–28 February 2019: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

**Sales, rights and licensing.** To purchase WHO publications, see <u>http://apps.who.int/bookorders</u>. To submit requests for commercial use and queries on rights and licensing, see <u>http://www.who.int/about/licensing</u>.

**Third-party materials.** If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

**General disclaimers.** The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Printed in France.

### Table of Contents

Abbro Execu	eviation	ns and acronyms	iv v	
11	Intro	duction		
1. 2	Anoning sossion			
2.	2 1	Summary of the second meeting	1	
	2.1	Paviaw of second meeting	1 2	
2	2.2 C		2	
3.	Country presentations			
	3.1	Mali: nearing stop MDA	3	
	3.2	United Republic of Tanzania: nearing stop MDA		
	3.3	Togo: nearing stop MDA.		
	3.4	Malawi: elimination mapping and nearing stop MDA studies		
	3.5	Nigeria: mapping plus a question of thresholds		
	3.0	Gnana: mapping		
	5.7 2.9	Ethiopia: a quastion of thresholds	/	
	3.0	Burundi: manning	/	
4	5.9		0	
4.	Comp	parison of ELISA platforms and RD1	8	
	4.1	ELISA verification phase and quality assurance for serological tests		
	4.2	ELISA standardization	10	
	4.3	Efforts to improve RDT: DBS and RDT	11	
	4.4	Efforts to improve RD1: dual antigen onchocerciasis test strip	12	
	4.5	Dual antigen test strip: additional data	12	
	4.0	Summary of ELISA versus RD1 comparison	13	
	4./	Discussion on ELISA and PDT	13	
	4.0	Recommendations on FLISA and RDT	13	
-	4. <i>9</i>		1/	
5.	Onch	Onchocerciasis elimination mapping		
	5.1	Identification of first-line villages	18	
	5.2	Sampling methods for stage 1 mapping	19	
	5.3	Lessons from the field on stage 1 mapping	22	
	5.4	Sampling methods for stage 2 mapping	22	
	5.5	Experience with stage 2 mapping		
	5.0	Additional lessons from pilot surveys of stage 1 and 2 mapping		
	5.1 5.9	Disconcerciasis mapping in areas co-endemic for lymphauc filariasis	·····2/ 20	
	5.0			
6. -	Maxii	mizing the available diagnostic tools	29	
7.	Updat	tes	31	
	7.1	Stop MDA threshold	31	
	7.2	New diagnostics	31	
	7.3	Milestones for elimination: developing the road map to 2030		
	7.4	Pre-stop MDA assessments	33	
Anna	v 1 N/	acting aganda	24	
Anne	х 1. IVI х 2. Г.	to finationants		
	Λ 4. LR	эт от рагистранко		

### Abbreviations and acronyms

AP	alkaline phosphatase
APOC	African Programme for Onchocerciasis Control
CDC	United States Centers for Disease Control and Prevention
DBS	dried blood spots
ELISA	enzyme-linked immunosorbent assay
EPI	Expanded Programme on Immunization
HRP	horseradish peroxidase
LF	lymphatic filariasis
LGA	local government area
mAb	monoclonal antibody
MDA	mass drug administration
M&E	monitoring and evaluation
mf	microfilariae
NIH	United States National Institutes of Health
NOEC	national onchocerciasis expert committee
OD	optical density
OEC	onchocerciasis expert committee
OEPA	Onchocerciasis Elimination Program for the Americas
OTS	Onchocerciasis Technical Advisory Subgroup
PCR	polymerase chain reaction
PPES	probability proportional to estimated size
pre-TAS	pre-transmission assessment survey
PSU	primary sampling unit
PTS	post-treatment surveillance
QA	quality assurance
QC	quality control
RDT	rapid diagnostic test
REMO	rapid epidemiological mapping of onchocerciasis
SD	Standard Diagnostics
TAS	transmission assessment survey
ТРР	target product profile
WHO	World Health Organization

#### **Executive summary**

The third meeting of the Onchocerciasis Technical Advisory Subgroup (OTS) of the World Health Organization (WHO) Department of Control of Neglected Tropical Diseases' Monitoring and Evaluation Working Group was held at WHO headquarters in Geneva, Switzerland, on 26–28 February 2019. The meeting reviewed new data comparing the available serological platforms for diagnosis of onchocerciasis and new data related to onchocerciasis elimination mapping (OEM). Additionally, it reviewed and provided input to the development of milestones relevant to elimination of onchocerciasis (interruption of transmission) for the achievement of the 2030 Sustainable Development Goals.

#### 1. Comparison of available diagnostics

Data from a variety of settings and countries were examined to determine programmatically relevant performance characteristics. The major comparisons included:

- the Standard Diagnostics (SD) Bioline enzyme-linked immunosorbent assay ( ELISA) kit;
- the United States Centers for Disease Control and Prevention (CDC) adaption of the alkaline phosphatase (AP) ELISA used by programmes in the Region of the Americas and in Ethiopia, Nigeria, Sudan and Uganda; and
- the SD Bioline rapid diagnostic test (RDT).

The version of the ELISA used in the Region of the Americas and in the aforementioned countries is referred to as the Onchocerciasis Elimination Program of the Americas (OEPA) ELISA in this report. In addition to reviewing results from a variety of field settings, a multi-site laboratory comparison of the available diagnostics that involved laboratories in the United States of America, Cameroon and Kenya took place. The comparisons of the available tests were challenging given the lack of a gold standard diagnostic and the paucity of other diagnostic data (e.g. skin snip polymerase chain reaction (PCR) or black fly PCR results). Generally, the SD Bioline ELISA kit yielded more positive results than the AP ELISA, which generally yielded more positive results that the SD Bioline RDT. Few comparisons involved the OEPA ELISA. There remained concerns that the SD Bioline ELISA kit yielded positive results that were not programmatically relevant because the discrepancy between the kit and the RDT was so large in many settings, and the too few positive results were based on results in several settings that had AP ELISA or other ELISA results.

Although all of the tests have been evaluated previously with specificity panels and have shown to be highly specific, some unanticipated false–positive results were obtained in samples from areas in which onchocerciasis is not endemic. The programmatic relevance of this was unclear at this time; the OEPA ELISA platform has been used in both the Region of the Americas and in the aforementioned countries without the level of cross-reactivity in the evaluation presented.

Test performance is not the only factor in deciding which test to use: the cost of the test, the logistics of procurement, the ease of quality assurance and quality control (QA/QC), and the reproducibility and standardization of results are also important. Data are being collected on all of these important considerations so that an informed decision can eventually be made. Regardless of the challenges, the ELISA has been used in a variety of formats and settings to demonstrate the impact of ivermectin treatment, to identify programmatic areas that are performing well and not well and to meet the WHO criteria for stopping mass drug administration (MDA).

As many programmes wish to proceed with OEM) it was important to try to find a way forward. Experiments demonstrated improved performance of the SD Bioline Ov16 RDT using blood eluted from dried blood spots (DBS) rather than from whole blood collected in the field. Finally, preliminary data from a new dual antigen test strip for onchocerciasis were reviewed. The addition of a second antigen (OvOC3261) to a lateral flow assay allowed identification of skin snip positive individuals who were missed by anti-Ov16 antibody response.

#### **Recommendations**

- Insufficient data are available for a recommendation of one ELISA platform over another. Programmes should continue to use the ELISA that they prefer; a QA system should be implemented and those data shared transparently with national onchocerciasis elimination committees to ensure that their decisions are based on the best available data.
- For OEM, DBS should be collected for mapping. Programmes could proceed with mapping using ELISAs or RDTs performed using blood from eluted DBS in a laboratory setting. Additional work is needed to define the performance of RDTs using blood from eluted DBS and provide recommendations for appropriate QA/QC.
- Additional ELISAs should be compared, including additional comparisons of the OEPA ELISA, and more data collected on intra- and interlaboratory variability in results. The unexpected false–positive results should be explored further. Until then, countries should continue to use the ELISA they prefer to evaluate when to stop MDA. Robust QA/QC systems should be implemented.
- The preliminary results of the new dual antigen test strip are encouraging; new tests that are better suited to programmatic needs, as specified by WHO, should be developed as a priority.

#### 2. Onchocerciasis elimination mapping

Data from a variety of pilot survey of first stage of OEM were discussed, and presentations were given on the statistical considerations that should be included in determining the target threshold for starting MDA.

#### **Recommendations**

- 1. Exclusion mapping (i.e. identification of unmapped areas where the environment is unfavourable for the presence of black flies) is important and should be undertaken before proceeding to stage 1 mapping.
- 2. Mapping should begin in high-risk areas (e.g. in areas near hyper- and meso- endemic districts or in areas where onchocerciasis was found during previous surveys). National programmes may wish to delay OEM in areas at lower risk until more data from pilot surveys become available.
- 3. Stage 1: Purposeful sampling of first-line villages
  - a. Select five first-line (or high-risk) villages.
  - b. Draw a convenience sample of 100 adults.
  - c. Test using eluted DBS on RDTs if programmes have insufficient experience with ELISA; save left over DBS. If ELISA is used, the QA/QC procedures should be properly documented and the results recorded.
  - d. If Ov16 prevalence in one or more villages exceeds the statistical threshold, then initiate MDA.
  - e. If Ov16 prevalence in all sites is below the statistical threshold, then proceed to stage 2 as marited by contact

## 预览已结束,完整报告链接和二维码如下:



https://www.yunbaogao.cn/report/index/report?reportId=5 24553