Dear Colleagues,

We are pleased to share with you the our first annual report combining updates for our three major donors: the Bill & Melinda Gates Foundation, USAID, and UK aid. This document details the progress on a wide array of projects conducted over the past fiscal year, in conjunction with research and government partners across the globe. Each project represents an effort to seed a research solution to a pressing problem for countries in their efforts to meet the goals set out by the World Health Organization to control and eliminate neglected tropical diseases.

This report is organized into five major sections, each representing one of our research priorities for FY18: diagnostics, mapping strategies, implementation of mass drug administration (MDA), MDA stopping and surveillance methods, and morbidity. Within each of these categories are sub-categories for ongoing work, giving an overview on the geographic location, implementing partners, research goals, and lessons learned for each. These sections are intended to provide a snapshot demonstrating what is being done and where, and what next steps will likely result - understanding that these priorities will likely evolve in the fiscal year to come.

In addition to operational research priorities, this report also provides updates on our additional work streams: including the African Researchers’ Small Grants Program and coordination of the annual meeting of the Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD). Peppered throughout the text are case studies, detailing the efforts of those engaged to eliminate neglected tropical diseases “on the ground.”

This report is long. It is long because it represents the work of hundreds of research and program implementation partners to tackle five diseases from countless angles. In compiling this report, we have become increasingly impressed with the dedication demonstrated by our coalition partners. Their tireless energy and quest for answers are generating research solutions to the trickiest issues facing countries as they continue to fight to overcome the neglected tropical diseases.

Sincerely,

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Annual COR-NTD Meeting
2017: “Innovate to Accelerate”
2018: “Engage to Eliminate”

Appendix
Acronyms
The need for improved diagnostics comes into much sharper focus as infection prevalence declines and elimination becomes a possibility. COR-NTD diagnostics research focuses on neglected tropical diseases amenable to preventive chemotherapy, or PC-NTDs. For diseases targeted by mass drug administration, programs need tests to provide data to guide programmatic decisions on the transition from mass treatment to targeted or no treatment, and then for some, verification of transmission elimination. Programmatic decisions on when to stop mass drug administration are based on surveys to document that infection levels have been reduced below a given threshold, using clinical, parasitologic, or serologic measures. While the operational research supported by COR-NTD does not focus on test development as a specific goal, testing and validating new tools to support program decision making is an important and overarching objective. COR-NTD supports field evaluations of both newly developed or improved rapid diagnostic tests, as well as laboratory diagnostics designed to improve the effectiveness of program decision making. This work will not only inform efforts of organizations collaborating to develop and commercialize new tools, but it will also support the World Health Organization (WHO) and ministries of health to achieve control and elimination targets.
LYMPHATIC FilariaSis DiAGnostics
Overall Status: ONGOING

Research Goal: Sensitive and specific diagnostic tools are the cornerstone of effective program decision making. For LF, the incorporation of the point-of-contact FTS and Brugia Rapid tests into the transmission assessment survey (TAS) enables programs to make stopping decisions based on clear thresholds. How best to use either these tests or new diagnostic tools based on the detection of antibody in humans or parasite DNA in vectors to carry out post-MDA surveillance is an open and important question.

Improvement of the existing Wb123 rapid diagnostic test or the development of a new test to support LF surveillance is an ongoing priority.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

- Antibody tools represent an important potential tool for LF surveillance, as antifilarial antibodies are an early indicator of exposure and are more prevalent in a population than either antigenemia or microfilaremia.
- Antifilarial antibody prevalence is low among children in areas where transmission is suspected to be low or interrupted.
- Significant spatial heterogeneity of antibody responses exists in post-MDA settings and might be an important indicator of ‘hotspots’ of persistent transmission.
- In its current format, the Wb123 Rapid Diagnostic Test (RDT) is of limited use because it is no more useful than the FTS.
- In FY19, new RDT formats will be investigated as potential surveillance tools.

See Also:


Loa loa DiAGnostics
Overall Status: ONGOING

Research Goal: Loa loa represents a particular challenge to oncho elimination because of the risk of serious adverse events (particularly when individuals presenting a L. loa microfilaremia exceeding 20,000 microfilariae per milliliter of blood [mf/ml] are treated with ivermectin). A cell phone-based microscope, the Loascope, opened the door to safe treatment of co-infected communities by excluding persons with high levels of L. loa microfilaremia. How best to scale up this intervention strategy is an area of active research by partners at NIH and IDR. Research is also underway to determine if new statistical algorithms based on the use of the Loascope or rapid antibody tests can play a complementary role by supporting mapping efforts (see below) and permitting implementation decisions to be made at the community or district level. Because most Loa endemicity maps are based on data collected nearly 20 years ago by an insensitive tool (RAPLOA), there may be areas thought to be endemic that can now be taken off the map based mapping strategies informed by these new tools.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

- A new rapid diagnostic test for Loa antibody – produced by DDTD – was evaluated in conjunction with onchocerciasis mapping in Nigeria and Gabon.
- Future research will pilot the tests in other country settings, such as DRC and Angola.

See Also:

ONCHOCERCIASIS DIAGNOSTICS
Overall Status: ONGOING

Research Goal: WHO recommends the use of serologic tests to guide decisions on starting and stopping MDA for onchocerciasis, but research is needed to define action thresholds and to determine the best assay to support the programs. The Ov16 antigen appears to be a reasonable marker of exposure to onchocerciasis, but in its present RDT format, the tool’s poor sensitivity makes it inadequate for programmatic use. Until an improved Ov16 RDT becomes available, the goal of this research is to identify a single standardized Ov16 ELISA protocol that can be used across labs; to characterize the performance of the Ov16 ELISA in field laboratory settings; and to support partners in training African labs to perform the test. In addition, work is ongoing to understand whether the performance of the present Ov16 RDT can be improved when performed in a local laboratory using eluted DBS.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

• Standard Diagnostics’ commercial Ov16 ELISA appears to have greater sensitivity and is easier to standardize across labs than other ELISA protocols.
• It is important to establish a realistic timeline and streamline the process for ordering, shipping, and clearing Ov16 ELISA kits into countries.
• There is a need to develop a set of standard criteria to judge whether regional labs have the equipment and technical capacity required to conduct the Ov16 ELISA.
• Similarly, a QA/QC system is needed to ensure the quality of the data being generated out of the regional labs.
• Work is presently underway at the KEMRI lab in Kenya to see if the team can replicate the finding that the sensitivity of the Ov16 RDT is greatly improved when the test is run in the laboratory with eluates from dried blood spots rather than whole blood.
• In FY19, funding will be awarded to support the work on a new two-antigen test (Ov16 & Ov3261) developed by NH and PATH, which, when used together, have been shown to increase the sensitivity from 80% to >90%.

See Also:
Zaida Herrador et al. Interruption of onchocerciasis transmission in Bioko Island: Accelerating the movement from control to elimination in Equatorial Guinea. PLOS NEGLECTED TROPICAL DISEASES, 2018;12(5):e0006471

TRACHOMA DIAGNOSTICS
Overall Status: ONGOING

Research Goal: Currently, trachoma elimination programs rely on clinical eye exams for program decision making and monitoring. Although eye exams are a useful tool for identifying where antibiotics are needed, as districts and countries reduce trachoma enough to begin stopping antibiotic distribution, ocular exams become less reliable and ensuring the availability of enough well-trained examiners becomes increasingly difficult and costly. It is important to determine if molecular tests for the presence of Chlamydia trachomatis bacteria or antibody tests to measure anti-chlamydial antibodies provide alternative tools to support programmatic decision making or surveillance.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

• Both molecular assays for bacterial DNA and anti-trachoma antibody provide useful complements to clinical assessments for the investigation of potential recrudescence of trachoma after MDA is stopped, but delays in lab processing hamper effective programmatic decisions.
• Molecular diagnosis does not correlate with clinically diagnosed infection, but antibody prevalence in children, in general, reflects trachoma prevalence in a community.
• Studies to analyze the performance of a pgp3 RDT prototype in the field are underway and being led by CDC.
• In FY19, an isothermal test to detect bacterial DNA is undergoing field testing in Tanzania.

See Also:
Sheila West et al. Surveillance Surveys for Reemergent Trachoma in Formerly Endemic Districts in Nepal From 2 to 10 Years After Mass Drug Administration Cessation. JAMA OPHTHALMOLOGY, 2017; 33: (11):141-146
Michelle Sun et al. Evaluation of a field test for antibodies against Chlamydia trachomatis during trachoma surveillance in Nepal. DIAGNOSTIC MICROBIOLOGY & INFECTIOUS DISEASE, 2017; 88: 1: 3-6
IMPORTANT GAPS IN COVERAGE REMAIN, AT LEAST IN PART BECAUSE OF THE NEED TO IMPROVE THE QUALITY OF INFORMATION ON THE GEOGRAPHIC DISTRIBUTION OF THESE INFECTIONS.

Despite great success in initiating and expanding programs targeting NTDs, important gaps in coverage remain, at least in part because of the need to improve the quality of information on the geographic distribution of these infections.

- For onchocerciasis, the requirement for additional mapping data reflects the shift in program goals from control to elimination, necessitating the development of new mapping strategies for areas previously considered to be hypoendemic. New mapping strategies are also required to support MDA implementation decisions in areas of co-endemicity with Loa loa infection.

- For LF, uncertainties about the need for MDA remain in Loa-co-endemic areas because the ICT and FTS tests – used to map LF – also give positive responses in persons with high levels of Loa loa microfilariae in the blood.

- For schistosomiasis, the COR-NTD meeting in 2017 provided an important opportunity for preliminary discussions around the need to develop a precision mapping strategy. Changes in program targets will require mapping at a finer scale to improve the precision of decisions to implement MDA, an important focus for future research efforts.

RESEARCH PRIORITY: MAPPING STRATEGIES
MAPPING LOIASIS & ONCHOECERCIASIS CO-ENDEMICITY

Overall Status: ONGOING

Research Goal: In the 10 countries where onchocerciasis and loiasis are co-endemic, the need for a mapping strategy is especially acute. Research goals include shrinking the Loa loa-risk map by excluding areas with a low risk of finding high Loa loa microfilaremics; operationalizing a statistical algorithm that utilizes cellscope-based Loa loa prevalence plus intensity data, as well as Loa loa antibody prevalence; and developing an operational strategy integrating the exclusion mapping, risk prediction algorithm, and test-and-not-treat approaches.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

• Field testing in Cameroon, Nigeria, and Gabon of a statistical algorithm that utilizes the prevalence and intensity of Loa loa microfilaria in a sample of the population – developed by Peter Diggle and colleagues – suggests that this tool can be used to guide safe treatment decisions at the community level.
• Initial pilot testing of the Loa loa antibody RDT suggest that it is a sensitive marker of exposure that might be feasible for programs to use for ‘exclusion mapping’ and enables significantly greater throughput than the cellscope or traditional microscopy because it is an antibody assay and blood can be collected at any time of the day.
• In FY19, studies will be conducted to test the utility of the Loa antibody rapid test to support exclusion mapping.
• Loascope and antibody data will be included in predictive risk maps to facilitate programmatic actions.

See Also:

Daniela K Schlüter et al. Using Community-Level Prevalence of Loa loa Infection to Predict the Proportion of Highly-Infected Individuals: Statistical Modelling to Support Lymphatic Filariasis and Onchocerciasis Elimination Programs. PLOS NEGLCTED TROPICAL DISEASES, 2016; 10:12


ONCHOECERCIASIS ELIMINATION MAPPING

Overall Status: ONGOING

Research Goal: Mapping of untreated areas that may have ongoing transmission of onchocerciasis is a critical next step in the path to eliminate onchocerciasis. While the Onchocerciasis Technical Subgroup (OTS) at the World Health Organization is tasked with developing the mapping strategy, operational research is urgently needed to inform the components of this mapping strategy. Multi-country studies will generate the data required to inform the number of sites to sample, the method of selection, the optimal age group, and Ov16 threshold to trigger mass drug administration.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

• A standardized oncho elimination mapping (OEM) protocol has been implemented in Malawi, Kenya, and Burundi; a study in Ethiopia began in late 2018.
• In settings with low endemicity, it is difficult for the NTD program to identify the sites with the greatest likelihood of ongoing transmission.
• Results from the initial OEM pilot support the use of a two-phase sampling strategy that includes collecting Ov16 prevalence data from adults both in first-line villages and randomly selected sites.
• It is not possible to use the results from the Ov16 RDT alone to make conclusions about endemicity status; due to the low sensitivity of the RDT, Ov16 ELISA results are required to confirm areas that are non-endemic.

See Also:

Kisito Ogoussan et al. Onchocerciasis: shifting the target from control to elimination requires a new first-step - elimination mapping. INTERNATIONAL HEALTH, 2018; 10:14:i19
RESEARCH SPOTLIGHT

Onchocerciasis: shifting the target from control to elimination requires a new first-step—elimination mapping

By Maria P. Rebollo, Honorat Zouré, Kisito Ogoussan, Yao Sodahlon, Eric A. Ottesen, and Paul T. Cantey

This is an excerpt from an article originally published in International Health.

The meaning of ‘mapping’ in relation to onchocerciasis has changed at least three times over the past 50 years as the programmatic goals and the assessment tools have changed. With the current goal being global elimination of *Onchocerca volvulus* (OV), all areas where OV might currently be transmitted and where mass drug administration (MDA) with ivermectin treatment has not been delivered previously must now be identified by careful, detailed ‘elimination mapping’ as either OV endemic or not, so that appropriate programmatic targets can be established. New tools and strategies for such elimination mapping have become available, though ongoing studies must still be completed to define agreed upon optimal diagnostic evaluation units, sampling strategies and serologic tools. With detailed guidance and technical support from the World Health Organization and with implementation and financial support from their global partners, the OV-endemic countries of Africa can soon complete their elimination mapping and then continue with MDA programmes to progressively achieve the same success in OV elimination as that already achieved by the growing list of formerly OV-endemic countries in the Americas.

Elimination mapping: What is it and why is it necessary now?

As the goals for onchocerciasis programmes have evolved, the requirements for mapping have changed as well.

1. For the OCP (1974–2002), the target was interruption of transmission through blackfly control. Therefore, the mapping that was needed was definition of the breeding sites for the blackfly vectors being targeted with pesticides.

2. For the APOC (1996–2015), and for much of the effort in the second half of the OCP after ivermectin became available, the programme target was to prevent severe clinical eye and skin disease by ensuring sustainable delivery of ivermectin to at-risk populations. Therefore, the mapping needed was to define those areas in onchocerciasis-endemic countries of Africa where the prevalence of infection was above a threshold associated with severe eye disease so that these areas could be treated with ivermectin. That threshold was defined as a 20% prevalence of adult men in a community having nodules identified clinically by palpation (the REMO [Rapid Epidemiological Mapping for Onchocerciasis] strategy) or 35% prevalence when determined by skin microfilariae assessed microscopically in skin snips. Populations with findings below these thresholds were given the descriptor of being onchocerciasis hypo-endemic and they were felt not to require treatment since severe disease was generally not seen at those levels.

3. The shift of onchocerciasis programme targets to elimination requires an entirely new dimension in understanding the geographic distribution of infection. Elimination mapping, whose purpose is to determine exactly where additional treatment with ivermectin is required, must now identify all places that are not currently under treatment with ivermectin (for onchocerciasis or LF) and where the prevalence of *O. volvulus* infection is high enough to sustain transmission so that appropriate intervention can be provided. What this means, in practical terms, is that all those areas previously excluded from onchocerciasis control programmes because they had been defined as hypo-endemic or assumed to be non-endemic must now be reassessed to determine whether or not onchocerciasis is endemic at a level above the threshold where ongoing transmission is possible. Complicating this challenge, unfortunately, is the fact that neither this threshold nor the appropriate sampling strategy to define it has yet been determined.

The WHO will need to organize a meeting of experts to review the available evidence on the tools and strategies for elimination mapping in order to develop an interim way forward for mapping and to develop the key operational research questions that should be addressed.

Elimination mapping needs. Distribution of districts in the WHO African Region that still need some additional assessment (specifics depending on information already available) in order to complete their elimination mapping. Data used to generate this pictorial display are taken from the AFRO NTD mapping data portal: http://ntd.afro.who.int/en/espen/home.
The success of elimination programs is directly related to treatment coverage rates in annual mass drug administration (MDA) campaigns. For LF programs, mathematical models suggest that an increase from 65 percent to 75 percent coverage may actually decrease the number of annual treatment cycles required to achieve success. These models assume that noncompliance is not systematic, so that essentially all persons are eventually treated. However, there are numerous programmatic situations in which segments of the targeted populations may fail to have adequate access to MDA, whether for LF or for other NTDs. These include settings in which large populations have migrated (or are internally displaced) as a result of natural disasters or civil strife, and where there are marginalized urban populations and groups not successfully reached or convinced by social mobilization strategies.

The contribution of these groups to ongoing transmission has not been quantitatively addressed, but intuitively, these hard-to-reach groups must represent a threat to the elimination goals when the prevalence of the targeted NTD is high in that subpopulation, and when the group represents a significant proportion of the total population. Defining strategies to address these groups, either directly by improving social mobilization or indirectly by increasing the performance of community drug distributors, will improve the effectiveness of NTD programs and address fundamental questions of equity.
**IMPROVED IMPLEMENTATION**

**Overall Status:** ONGOING

**Research Goal:** The success of MDA programs requires effective planning, community engagement, and delivery by community drug distributors. Several key issues have been identified that would benefit from targeted OR studies. WHO’s new “Guidance on Assessing Who is Left Behind and Why” provides a framework for analyzing challenges in achieving effective delivery of NTD interventions. As an example, triple drug therapy for LF has been proposed as a solution in settings where years of MDA have failed to achieve program success; however, a new therapy will not address fundamental problems in program delivery or social mobilization, especially in urban settings where programs have struggled to achieve high coverage.

**Research Sites and Implementing Partners:**

- **In Uganda and Côte d’Ivoire,** several strategies have been identified to improve MDA outcomes: 1) increasing social accountability through community meetings; 2) increasing the performance of community drug distributors (CDDs) by providing them with feedback via text messages; 3) implementing the supervisor’s coverage tool; and 4) increased discussion of resilience and troubleshooting during CDD training.
- **To improve MDA planning and implementation in Indonesia,** researchers identified differences between doers (those who took the pills) and non-doers and are developing enhanced and targeted social mobilization strategies based on these differences.
- **In Tanzania and Kenya,** social scientists are working with both Ministries of Health to address challenges of reaching nomadic populations during MDA.
- **In Kenya,** researchers will work closely with the national NTD program to support the rollout of IDA through the introduction of the supervisor’s coverage tool.

**Preliminary Lessons Learned and Next Steps:**

- Several districts in Tanzania have experienced challenges with TIS failures; work is presently underway to understand whether these TIS failures are true indicators of sites with ongoing transmission or an artifact of a non-specific clinical diagnostic tool.
- **In FY19,** we plan to work with the NTD programs in Burkina Faso and Ghana where districts have been unable to reach MDA-stopping targets for LF despite numerous rounds of MDA. To ensure that further rounds of MDA are effective at lowering prevalence to a level at which MDA can be stopped, new quantitative and qualitative information will be collected on the reasons for pre-TAS and TAS failures.

**See Also:**

Alison Krentel et al. Review of the factors influencing the motivation of community drug distributors towards the control and elimination of neglected tropical diseases (NTDs). PLOS NEGLLECTED TROPICAL DISEASES, 2017; 11(12):e0006065
Research Goal: WHO has approved the triple drug combination of ivermectin, diethylcarbamazine, and albendazole (IDA) for programmatic use in areas where onchocerciasis is not endemic and where districts have not yet started MDA, or where MDA results have been suboptimal. However, there is currently no M&E strategy for implementing this treatment regimen in the context of NTD programs. The goal of this research is to support the development of an M&E strategy that can guide programs in making appropriate stopping and surveillance decisions where IDA is administered in order to drive LF towards elimination.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

- A generic M&E operational research protocol has been developed, together with DOLF and other partners, that will generate the data required to identify an appropriate M&E strategy for triple drug stopping decisions.
- Implementation of the generic protocol is being supported by COR-NTD in Samoa and Kenya, with plans to support IDA rollout in India, Egypt, and other countries in FY19.
- Work is ongoing to understand how the confirmatory mapping tool (aka ‘mini-TAS’) can be used to make sure that IDA is prioritized to the areas of greatest risk, which may require sub-district stratification.
When planning for mass drug administration (MDA) for NTDs, acquiring the drugs is only the first step – or the “first mile.” The real challenge comes in getting drugs from the Ministry of Health into the hands of the people who need them. This “final mile” of an MDA relies on the hard work of community volunteers and specifically, community drug distributors (CDDs).

These volunteers bridge the gap between the NTD programs and the communities they are serving, often times leading by example by taking medicines alongside the communities and ensuring the cultural acceptability of the MDA. Sustaining the motivation of CDDs is critical – but how?

This question is at the heart of iChord, the new collaboration between the Bruyère Research Institute (Canada), the African Institute for Health and Development (AIHD) (Kenya), University of Health and Allied Sciences (UHAS) (Ghana), and the Ministries of Health in Côte d’Ivoire and Uganda. iChord – or Improving Community Health Outcomes through Research and Dialogue – works with CDDs, community partners, and government NTD programs to sustain the motivation of CDDs and to improve their performance.

In this interview, iChord’s founders – Alison Krentel of the Bruyère Research Institute, Margaret Gyapong of the Institute for Health Research in UHAS in Ghana, and MaryAmuyunzu-Nyamongo of the AIHD – describe the vision for that collaboration.

What was your motivation behind iChord? Was it inspired by any particular studies or experiences in the field?

In November 2014, COR-NTD asked us to host a session for program managers that would specifically delve into understanding their needs and concerns. One issue that was deemed crucial for successful operational research was around understanding and sustaining the motivation of CDDs. Many program managers and people working to support MDA programs felt that they faced challenges keeping these individuals motivated over the course of the elimination programs. Some of the participants felt that low coverage in some of their districts was attributable to low motivation of under-remunerated CDDs. We followed up on this initial request with a meeting in Accra, Ghana in April 2015 with representatives from Ghana, Kenya, Uganda, the Democratic Republic of Congo (DRC), Côte d’Ivoire, and Cameroon.

That meeting was the basis for a project that began in Côte d’Ivoire and Uganda in 2016 to understand what motivates CDDs working in NTD programs. We based our research on a systems approach – meaning that we wanted to understand CDD motivation from the perspectives of the CDDs themselves, the health system, and the communities they serve.

What did you find as a result of this study? Were you surprised by what you found?

We were surprised by some of the results – especially the fact that financial motivation was not the main concern of CDDs. Rather, they needed recognition, appreciation, and feedback on the work they were doing. Our results showed that CDDs were in fact highly motivated individuals who work under challenging circumstances at times.

Another surprising finding was the different profiles of urban CDDs compared to their rural counterparts, specific to the research sites in Côte d’Ivoire. They are younger, more educated, and come from wealthier households. However, we found that the rural CDDs were more efficient in their work, had more experience, and spent more time with the community when they were distributing drugs.

In Phase 2, the results from the baseline study were fed back to the community and the program managers at country level to ascertain their opinions and analysis. Presently, we are carrying out the interventions and recommendations derived from the baseline study.

One of the important considerations for this current phase is that all the interventions that we are trialing to improve and sustain the motivation of the CDDs are based on a model that will not cost the NTD programs any additional money. The first phase of our research suggested that financial payments were not the primary drivers to motivate CDDs; rather feedback, active supervision, and community support were seen to be more important.

How do you see iChord and the results from your research affecting programmatic decisions?

The study is already influencing program decisions regarding selecting of CDDs engaging better with communities – with elements of this project being presented to countries considering Triple Drug Therapy with ivermectin, diethylcarbamazine, and albendazole (IDA). Because achieving high coverage is required for IDA rollout, enhancing the support of CDDs is going to be paramount to reaching our elimination goals.

We are anxious to see how it was used and appreciated by both the CDDs and the community members themselves. Check out our website, www.ichord.org, and stay tuned!
The growing focus on elimination of NTDs argues for the development of a robust monitoring and evaluation framework.

The transmission assessment survey (TAS) was designed as a simple, but flexible and statistically robust methodology to document that the NTD prevalence (e.g., of LF) is below a pre-defined threshold. Though research is ongoing to understand whether it is necessary to adapt the TAS in specific program settings, it is likely that similar approaches could be adapted for use by other NTDs. These questions are likely to be addressed most effectively through multi-country, multi-investigator studies and with the active collaboration with the modeling community. Although the TAS will be the focus of our initial efforts, it will not be an exclusive approach to programmatic decision making.

Conclusive demonstration that transmission has been interrupted requires that surveillance be carried out to document the absence of transmission. For vector-borne diseases, molecular testing of vectors for the presence of parasite DNA can be done to rule out infection. In addition, if MDA interventions have interrupted transmission, children should, in theory, lack serologic evidence of infection. Diagnostic tools used for surveillance must be capable of detecting incident infections with great sensitivity and specificity. In addition, new survey designs may be needed to increase the cost-effectiveness of surveillance and to enable integrated surveillance across pathogens.

**RESEARCH PRIORITY: MDA STOPPING & SURVEILLANCE METHODS**

Researchers collect data to assess whether MDA for lymphatic filariasis can stop in Haiti. Photo Credit: Billy Weeks for The Task Force for Global Health
**TAS STRENGTHENING**

**Research Goal:** Recent field studies suggest that the transmission assessment survey (TAS) – the basis for LF stopping and surveillance decisions – may not be a sufficiently sensitive tool, particularly in settings where Aedes or Culex mosquitoes are the primary LF vectors. Studies in Sri Lanka, American Samoa, Haiti, and the Philippines have found that districts can pass a TAS but, upon subsequent examination, be found to have ongoing transmission (based on a TAS 2 or TAS 3 failure). This presents a risk to programs and donors because premature stopping of MDA can lead to a recrudescence of infection that requires significant investment and expenditure of political capital to restart MDA. The goal of this research is to support modifications to the TAS platform to strengthen MDA stopping decisions in challenging program settings.

**Research Sites and Implementing Partners:**

**Preliminary Lessons Learned and Next Steps:**

- The serology results from the TAS Strengthening studies in American Samoa, Haiti, the Philippines, and Tanzania suggest that children can serve as indicators of community ‘hotspots’ (defined by antigenemia in adults), but that use of FTS in children alone is not sufficient to identify all potential community hotspots.
- The data from these studies suggest that a closer analysis of TAS results at the cluster (e.g., school) level could help to identify areas in need of further MDA before waiting for a subsequent TAS failure.
- Entomology results from American Samoa and Tanzania are expected in FY19, which will then enable a comprehensive multi-country comparative analysis of entomologic and human serologic assessment tools.
- A technical meeting to discuss the results and implications from these studies is anticipated in FY19.

**See Also:**


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**POST-MDA SURVEYS (TAS 2 & 3)**

**Overall Status:** ONGOING

**Research Goal:** The WHO LF program manager’s manual encourages program managers to conduct follow-up surveys in communities where antigen-positive children are detected during a transmission assessment survey (TAS). The recommendations do not offer guidance on how this follow-up should be conducted and what the programmatic response should be. As sites pass TAS 2 and 3, hotspots of ongoing transmission may go undetected, jeopardizing elimination. The goal is to identify a sampling strategy that is accurate and practical for programmatic use.

**Research Sites and Implementing Partners:**

**Preliminary Lessons Learned and Next Steps:**

- The TAS 2 & 3 follow-up of positive cases was implemented in two provinces in the Philippines in June 2018; similar studies in Haiti and Burkina Faso have been planned for implementation in early 2019.
- FTS results suggest that, in some cases, one or more FTS-positive children identified in schools during TAS 2 or TAS 3 may indicate ongoing transmission in their communities and/or surrounding communities.
- Further work to determine the optimal method for mapping and the role of Wb123 antibody is ongoing.

**See Also:**

Kimberly Won et al. Comparison of antigen and antibody responses in repeat lymphatic filariasis transmission assessment surveys in American Samoa. PLOS NEGLECTED TROPICAL DISEASES, 2018; 12: 3
INTEGRATED STOPPING & SURVEILLANCE  
Overall Status: ONGOING

Research Goal: Mass drug administration (MDA) with ivermectin (Mectizan®) is the recommended strategy for elimination of onchocerciasis and, with albendazole, for LF. The transmission assessment survey (TAS) is used by LF programs to guide MDA stopping decisions. A modified TAS that also meets WHO criteria for MDA stopping decisions for oncho could be a cost-effective tool to make joint stopping decisions. The goal of this work is to determine the validity and feasibility of an integrated TAS (iTAS) to assess oncho and LF prevalence in areas co-endemic for the two infections that have completed the recommended treatment for one or both.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

- The iTAS protocol has been implemented in Nigeria, Burkina Faso, and Tanzania, and it was found by all three programs to be a feasible and resource-saving strategy.
- The onchocerciasis technical subgroup (OTS) has endorsed the integrated TAS survey as long as the minimum survey requirements for the respective LF and oncho stopping surveys are both met.
- Ov16 ELISA results for all studies are pending and expected to confirm whether MDA for oncho can be stopped in several districts.
- Xenomonitoring was conducted as part of the iTAS in Nigeria and the results are expected to help inform whether a revision to the stopping threshold for oncho is warranted.

POST-TREATMENT SURVEILLANCE  
Overall Status: ONGOING

Research Goal: The challenge of how to conduct ongoing surveillance once a country successfully stops MDA is shared by all the PC-NTDs. However, this need for a surveillance strategy is particularly acute for LF and trachoma, where more and more countries are reaching the “validation of elimination” endpoint. There is currently no guidance on how to conduct post-validation surveillance to ensure that transmission remains interrupted. The goal of this research is to develop sensitive survey tools that countries can use to conduct integrated or stand-alone surveillance activities and ultimately reach a point of “verification of elimination.” A related aspect of achieving verification status is determining how to detect microfoci or “hotspots” of transmission. The goal of this research is to develop new sampling strategies, geospatial data, and mobile technology to improve programs’ abilities to detect and monitor infection hotspots.

Research Sites and Implementing Partners:

Preliminary Lessons Learned and Next Steps:

- A post-treatment surveillance study on LF in Bangladesh, collecting blood samples from adult hospital outpatients, found that integrating NTD surveillance activities into the primary health system is laborious but feasible; a follow-on study is currently being planned to determine whether the antigen-positive adults identified are indicative of sites with ongoing transmission.
- Studies on the utility of serologic and PCR-based markers of Chlamydia trachomatis infection found that the pgp3 antigen is a useful tool for understanding exposure and transmission dynamics. PCR-based markers, though useful for verifying the presence of infection, are expensive to conduct and consequently not ready for wide scale programmatic use. A recently approved study in Ghana, a country which has already been validated for the elimination of trachoma, is focused on assessments in settings which may represent potential hotspots.
- A previous national integrated serosurvey in Cambodia highlighted the wealth of useful programmatic information that can be obtained through integrated surveillance using multiplex bead assays, and demonstrated that Wb123 prevalence can be used to discriminate between previously endemic and non-endemic parts of the country. A follow-up serosurvey study is anticipated for FY19 in LF-endemic provinces of Cambodia to pilot a potential post-validation survey approach.
- Work is underway to develop an online geostatistical mapping tool that will enable countries to use the results of prevalence surveys to identify potential hotspots of transmission and use adaptive sampling to suggest sites where additional data collection would be beneficial.
- In FY19, surveys will be conducted in Morocco to better understand the utility of the pgp3 assay for trachoma surveillance in post-validation settings.
- In FY19, a cross-cutting meeting is planned to define strategies to identify and mount appropriate public health responses to transmission foci (hotspots).

See Also:

Zaida Herrador et al. Interruption of onchocerciasis transmission in Bioko Island: Accelerating the movement from control to elimination in Equatorial Guinea. PLOS NEGLECTED TROPICAL DISEASES, 2018;12(5):e0006471

Kimberly Won et al. Comparison of antigen and antibody responses in repeat lymphatic filariasis transmission assessment surveys in American Samoa. PLOS NEGLECTED TROPICAL DISEASES, 2018; 12: 3
In order to get the right answers, you have to ask the right questions. This sounds like common sense, but sometimes it can be easier said than done, particularly when the right questions do not appear to be related to the greater research question. This was the case in a study to strengthen the transmission assessment survey, or TAS, for lymphatic filariasis in the Philippines in 2017. By adding a single question to her survey, Dr. Leda Hernandez and her team at the Philippines Department of Health uncovered social barriers to mass drug administration that undermined the efficiency and effectiveness of the national lymphatic filariasis elimination program.

A collaborative effort of the Philippines Department of Health, the Centers for Disease Control and Prevention, and the Neglected Tropical Diseases Support Center (NTD-SC), the study did not have social science as its primary objective. Instead, it was part of a larger, multi-country effort to strengthen the strategy for assessing ongoing transmission of lymphatic filariasis (LF) after several rounds of mass drug administration (MDA). The current “gold standard” for this is the World Health Organization-recommended TAS, a standardized and statistically rigorous method, which serves as the tool for determining when it is safe to stop MDA.

The TAS is also used as a surveillance tool; repeated at 2-3 year intervals to ensure that transmission has not resumed. “It is unusual, but possible for an area to pass TAS the first time, but fail a subsequent TAS,” explains Katherine Gass of the NTD-SC. “This could be due to an increase in transmission or it could be that the original TAS failed to detect a signal by chance.” The latter scenario is of concern to national LF programs, because a false “passing” grade can lead to programs stopping MDA prematurely, thereby undermining elimination efforts.

In a context like the Philippines, an archipelago of over 7,000 islands, assessing transmission levels can be a particular challenge. The physical constraints of the Philippines create many unique endemic zones. LF is endemic in 46 of 81 provinces in the Philippines, and while the Philippines National Filariasis Program began implementing MDA of diethylcarbamazine (6mg/kg) and albendazole (400 mg) in 2000, progress in some of these regions has proven challenging.

One province where LF transmission is still active is Mindoro Oriental, a relatively small province with a population of 844,000 people. Mindoro Oriental passed its first round of TAS in 2012, but only barely. Of the 3,080 children sampled, 15 tested positive for LF. This result technically “passes” because the number of positive cases was below the threshold of 18, but the margin was so small that the Evaluation Unit (EU) was flagged as a potential risk. TAS was repeated in 2015, and this time Mindoro Oriental failed.

Enter Dr. Leda Hernandez, Division Chief for the Department’s Infectious Disease Office in the National Center for Disease Prevention and Control. Dr. Hernandez saw the TAS results in Mindoro Oriental as an opportunity for operational research to improve the strength of the TAS. In 2017, she partnered with the NTD-SC research team to investigate potential programmatic reasons for the TAS 2 failure on the island and to identify hotspots of ongoing transmission.

Dr. Hernandez also had a hunch. With 25 years of experience working with the national LF program, she had a unique understanding of regional challenges - epidemiological and social. She asked the research team to incorporate additional questions not generally incorporated in a TAS questionnaire to capture data on social factors in Mindoro Oriental. She was curious about whether a person’s ethnicity correlated with LF infection. In particular, she was interested in the large indigenous population on the island, and whether or not members of this group were more likely to test positive.

The results were striking. Of all parameters collected in the survey, ethnicity had the strongest correlation with probability of positive test results. It was also one of two parameters that proved statistically significant in the regression analysis. A subject identified as indigenous (Mangyan) was 66.9-76.5% more likely to be infected than a non-indigenous subject (majority Tagalog).

These statistics imply some kind of barrier to access, but further research is needed to distinguish between incomplete coverage and incomplete compliance. Were the indigenous peoples in Mindoro Oriental not offered the drugs, or did they choose not to take them? The explanation could be as simple as the seasonal calendar of the Mangyan, which led more people to be away from their barangays at the time of MDA. Alternatively, these preliminary results could provide insight into a greater, systemic inequity.

“Questions can lead to more questions,” explains Dr. Hernandez. “The key is the zestful pursuit to find the answers which will guide the program to develop strategies and approaches that appropriately address the challenges of the future for the greater good of all.”
RESEARCH IS NEEDED TO UNDERSTAND HOW TO STRENGTHEN HEALTH SYSTEMS TO IMPROVE ACCESS TO QUALITY CARE.

The NTD community has made significant strides in scaling up MDA to reach all vulnerable populations across many countries; however, significant challenges remain, particularly in terms of ensuring equitable access to morbidity management and disease prevention (MMDP) services. Research is needed to understand how to strengthen health systems to improve access to quality MMDP care and to reduce the barriers which prevent persons with disability from taking advantage of these services. Because NTDs frequently overlap in terms of their geographic distributions, it is also important to determine how to integrate MMDP services across diseases.
**Research Goal:** MMDP services have lagged behind MDA in terms of patient reach. To improve access to quality MMDP services in endemic communities, it is necessary to understand both the barriers to care as well as the opportunities to expand existing clinical services to meet the needs of patients disabled by NTDs. The LeDox Clinical Trial is also included in the MMDP work (with more details on the following pages).

**Research Sites and Implementing Partners:**

- Preliminary Lessons Learned and Next Steps:
  - Ongoing projects focus on improving surgical outcomes for trichiasis surgery.
  - COR-NTD issued a call for proposals in July 2018 to support research on the delivery and optimization of MMDP services, particularly when integrated with other elements of the health system.
  - A total of seven projects in Kenya, Zambia, Haiti, Mozambique, Ghana, Liberia, and Nigeria – representing more than $1M in research support – have been awarded funding.
  - The body of research represented by these projects has a strong potential to promote cross-country learning and inform global MMDP activities, expanding the COR-NTD research portfolio to an important and neglected area.

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**Schistosomiasis Morbidity Indicators**

**Overall Status:** PLANNED

**Research Goal:** In most parts of the world, schistosomiasis remains the focus of a control program, aimed at preventing chronic morbidity through MDA with praziquantel. The current WHO goals for controlling schistosomiasis morbidity are based on reducing prevalence of heavy infection below defined thresholds in targeted populations (typically school-aged children). Morbidity control is defined as lower than 5% prevalence of high intensity infections and elimination as lower than 1% prevalence of high-intensity infection. There is a need to better understand the relationship between these cutoffs for high intensity infections and morbidity and to determine how to deliver MDA to achieve effective morbidity control.

**Research Sites and Implementing Partners:**

- Preliminary Lessons Learned and Next Steps:
  - Evidence-based targets for morbidity control will support more effective use of donated praziquantel and will help to maximize the public health impact of schistosomiasis programs.
  - Work in FY19 will focus investigating the relationship between infection prevalence and morbidity in Kenya (*S. mansoni*) and Malawi (*S. haematobium*).
RESEARCH SPOTLIGHT

**LeDoxy Clinical Trial**

Current lymphedema management protocols are based on the use of simple measures of hygiene (regular washing with soap and water, skin and nail care), use of topical antibiotics or antifungal agents, exercise, and footwear. This is considered the “standard of care” in most endemic countries in the absence of any structured treatment programs. Previous controlled clinical trials and extensive field experience have shown the benefit of these measures in reducing the frequency of attacks of acute dermatolymphangioadenitis (ADLA) that drive the progression of lymphedema.

In the LeDoxy clinical trial, the progression of lymphedema in a group of patients who receive a six-week course of doxycycline is being compared with that of a group who receives “doxycycline-look-alike” placebo tablets. However, both groups have been enrolled into a standardized “regimen of hygiene” described above. Thus, patients enrolled in the “placebo” group also receive the current standard of care, and the placebo used in the study helps to identify the benefits of doxycycline on a background of simple hygiene measures. Patients are to be evaluated at 3, 6, 12, and 24 months using standardized assessment techniques.

Channa Yahathugoda leads University of Ruhuna staff in examination and WASH training techniques at the start of the LeDoxy trial in Sri Lanka in February 2018.

**A COR-NTD Success Story: Testing the LymphaTech 3D Scanner for Use in LF Lymphedema**

By Philip Budge

Philip J. Budge, MD, PhD is Assistant Professor of Medicine at Washington University School of Medicine in St. Louis

One of the really great things about COR-NTD is the opportunity it provides to make and strengthen collaborative connections. At the time of the COR-NTD meeting in 2016, we were involved in planning an upcoming clinical trial that involves longitudinal monitoring of limb lymphedema. When we saw LymphaTech present their Xbox-inspired 3D scanner at the Innovation Lab, we thought it would be a great tool for longitudinal lymphedema monitoring. Channa Yahathugoda, Rao Ramakrishna, and I asked Mike Weiler and Nate Frank from LymphaTech whether they’d be interested in piloting this for LF in a small study in Channa’s clinic in Sri Lanka.

Although they had not yet developed the software for measuring legs (they’d previously focused on breast cancer-related arm lymphedema), LymphaTech accepted the challenge. By March they’d worked out the software issues, we’d gotten a protocol approved and through Ethics/IRB in Sri Lanka and at Washington University in St. Louis.

We conducted the study at the end of March 2017 and found that the scanner worked very well for measuring leg volume and circumferences, and it took only about two minutes per patient. The data were so encouraging that the LeDoxy study investigators opted to add the scanner measures as an endpoint in that study. More importantly, this adds to the lymphedema management toolbox a great way to longitudinally track lymphedema progression (or regression) conveniently, reliably, and accurately.

Although a lot of factors came together to make this study possible, COR-NTD was key in bringing together the innovators (LymphaTech), researchers, and clinicians.

<table>
<thead>
<tr>
<th>Country</th>
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<th># Enrolled</th>
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<td>Government TD Medical College Hospital</td>
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<td>Sri Lanka</td>
<td>Feb 2018</td>
<td>219</td>
<td>University of Ruhuna, University of Washington in St Louis</td>
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<tr>
<td>Mali</td>
<td>June 2018</td>
<td>156</td>
<td>ICER, National Institute of Health</td>
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See Also:

ClinicalTrials.Gov: NCT02927496, NCT02929121, and NCT02929134

THE COR-NTD HAS WORKED WITH MANY AFRICAN IMPLEMENTATION PARTNERS TO MAKE SIGNIFICANT CONTRIBUTIONS TO NTDs SINCE ITS INCEPTION IN 2013.

With support from USAID – as well as newly committed support from UK aid – the African Research Network for Neglected Tropical Diseases (ARNTD) is collaborating with COR-NTD to implement the African Researchers’ Small Grants Program (SGP). The COR-NTD has worked with many African implementation partners to make significant contributions to NTDs since its inception in 2013. Collaboration with the ARNTD as a network provides a unique opportunity for a synergistic, concentrated, and inclusive effort to address emerging challenges facing program implementation in Africa in line with the goals established in the London Declaration on NTDs.

This funding program has the following objectives:

1. To increase self-initiated African involvement and visibility in NTD operational research through direct engagement with programs;

2. Contribute to improving the research capacity of an existing cadre of African NTD researchers and strengthening African research institutions in the process by supporting translational or operational research into NTDs that is locally originated and led, either by junior researchers or experienced researchers ready to expand their research programs;

3. To improve South-South communication and collaboration among researchers, policy makers and implementers, and to support community participation in research and agenda-setting; and

4. To promote a viable model of North-South collaboration through increasing ownership and improving effectiveness of administering program engagements from within Africa.

PHOTO: ARNTD Secretariat staff John Anuasi (far left) and Isaac Olai (far right) pose with SGP I awardees (from left) Humphrey Mazigo, Regina Ezenot-Nwadiaro, Monique Donkano, and Mabula Kasubi at the 2017 COR-NTD Meeting
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<tr>
<th>SGP YEAR II AWARDEES</th>
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<tr>
<td><strong>Joy Chikwendu</strong></td>
<td>University of Agriculture, Makurdi, NIGERIA</td>
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<tr>
<td>Investigation of possible ongoing Schistosoma hybridization in Nigeria and implications for response to treatment</td>
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<td><strong>Ameyo N. Monique Dorkenoo</strong></td>
<td>University of Lomé, TOGO</td>
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<td>Monitoring migrant groups as a post-treatment surveillance approach to contain the potential risk of lymphatic filariasis re-emergence after stopping mass drug administration in Togo</td>
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<td><strong>Regina Ejemot-Nwadillo</strong></td>
<td>University of Calabar, NIGERIA</td>
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<td>Demand creation and services uptake for onchocerciasis control in Cross River State, Nigeria</td>
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<td><strong>Pythagore Fogue</strong></td>
<td>University of Dschang, CAMEROON</td>
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<td>Development of a molecular diagnostic method for soil-transmitted helminthiases: Epidemiological implications for disease control</td>
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<tr>
<td><strong>Mabula Kasubi</strong></td>
<td>Muhimbili National Hospital, TANZANIA</td>
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<tr>
<td>Does infection data add anything to our understanding of trachoma prevalence in low endemic areas?</td>
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<tr>
<td><strong>Humphrey Mazigo</strong></td>
<td>Catholic University of Health and Allied Sciences, TANZANIA</td>
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<tr>
<td>Integrating use of point-of-care circulating cathodic antigen rapid diagnostic by community health workers during mass drug administration campaign to increase uptake of praziquantel treatment among adult populations in North-Western Tanzania: A cluster randomized trial</td>
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<tr>
<td><strong>Chinenye Afonne</strong></td>
<td>University of Ibadan, NIGERIA</td>
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<td>Factors influencing uptake and delivery of preventive chemotherapy for helminthic neglected tropical diseases among selected hard-to-reach communities in South-Eastern Nigeria</td>
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<td><strong>Yaw Afrane</strong></td>
<td>University of Ghana, Legon, GHANA</td>
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<tr>
<td>Optimizing surveillance and preventive treatment for control and elimination of NTDs in Ghana</td>
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<tr>
<td><strong>Mekuria Asfaw</strong></td>
<td>Arba Minch University, ETHIOPIA</td>
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<td>Barriers, facilitators and solutions for equitable access to preventive chemotherapy (PCT) at South Omo, Southern Ethiopia</td>
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<td><strong>Pelagie Boko</strong></td>
<td>Ministry of Health, BENIN</td>
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<td>Evaluation of lymphatic filariasis treatment impact by the molecular xenomonitoring in five endemic districts under mass drug administration in Benin, West Africa</td>
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<td><strong>Kwadwo Frempong</strong></td>
<td>University of Ghana, Legon, GHANA</td>
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<td>Field evaluation of newly developed urine dipstick for onchocerciasis diagnosis</td>
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<tr>
<td><strong>Naa Adjeley Frempong</strong></td>
<td>University of Ghana, Legon, GHANA</td>
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<tr>
<td>Assessing schistosomiasis and soil-transmitted helminths (STH) in pregnant women: A basis for inclusion in routine antenatal care (ANC) screening</td>
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| **Michael Frimpong** | Kumasi Centre for Collaborative Research in Tropical Medicine, GHANA |
| Field evaluation of a mobile laboratory suitcase employing real time recombinase polymerase amplification assay for the rapid detection of Schistosoma haematobium infection among school children |
| **Hikabasa Halwiindi** | University of Zambia, ZAMBIA |
| Multi-level barriers in access to equitable and effective control of schistosomiasis in Zambia |
| **Blahima Konaté** | Muraz Centre, BURKINA FASO |
| Access to treatment for neglected tropical diseases and nomadism in the Sahel of Burkina Faso: a group analysis with key stakeholders |

See Also:
Humphrey D. Mazigo et al. Integrating use of point-of-care circulating cathodic antigen rapid diagnostic tests by community health workers during mass drug administration campaigns. BMC PUBLIC HEALTH, 2018; 18: 840
Establishing quality assured (QA) laboratory support for onchocerciasis elimination in Africa

By Joseph Shott, Camilla Ducker, Thomas R. Unnasch, and Charles D. Mackenzie

This is an excerpt from an article originally published in International Health.

An essential component in achieving accepted successful elimination of a disease or a pathogen involves the acquisition of quality-assured (QA) data that ultimately define the absence of infection or transmission in previously endemic areas. The acquisition of these essential data, in the case of onchocerciasis elimination, requires strong laboratory support for both testing and continuing evaluation/validation of the tools used for the required diagnostic and epidemiology procedures. There is also a need for standardization of the laboratory-based and field-based assays used across the onchocerciasis-endemic countries as well as continuing technical, fiscal and logistical support for laboratory activities. To achieve these needs, it is proposed to build on the existing onchocerciasis programme laboratory activities in the endemic areas by expanding these to include additional laboratories as referral services organized on a regional basis to support the needs of endemic countries. Included in these plans are the development of quality assurance mechanisms, supply chain procedures and standardization of protocols for the basic assays needed for both national onchocerciasis elimination programme surveys and supporting research activities. Such an entity could then include quality-assured testing for other neglected tropical diseases.

Major principles

The four major principles that will need to be followed in the proposed expanded laboratory network are ensuring the use of standard protocols, maintaining an appropriate quality assurance (QA) system, ensuring a laboratory supply chain system and establishing and maintaining a laboratory network communication system for sharing of experiences, protocols and appropriate data linking.

A focus on onchocerciasis elimination

The laboratory needs for the monitoring and evaluation of endemic countries’ programme efforts to eliminate onchocerciasis have essentially been defined by the WHO to require two major assessments: the presence, or absence, of antibodies to onchocercal antigen (currently OV16) in the human population in endemic areas, especially the young residents in a target population.

This assessment is carried out by an ELISA technique, and hopefully incorporating suitable RDTs in the future (QA for the latter is still carried out by comparing RDT findings with ELISA results). It should be noted that both of these tests for onchocerciasis are still being further developed by researchers as they seek more usable and comparable assays needed for uniformity across the WHO onchocerciasis programme endemic areas. The other basic technique needed for onchocerciasis programme evaluation is PCR, which is used for measuring the parasitic status of the vectors from onchocerciasis infection transmission sites; the detection of the presence of Onchocerca L3 molecular components (e.g., O-150) indicates the presence of infection in these Simulium vectors. Although older techniques, such as parasitological assessment of skin snips (microbiopsies), for epidemiological questions are still used by some programmes, often as confirmatory tests, such tests are not now generally accepted for programmatic use. It goes without saying that the essential indicator of the successful elimination of onchocerciasis will be based on information produced by laboratory testing. Likewise, it is very clear that developing the necessary facilities to provide these data in a high-quality manner is a priority for the global onchocerciasis elimination programme. It is fully expected that the expanded laboratory network proposed and described here will also process the many research-oriented samples that will be generated.
ANNUAL COR-NTD MEETING 2017: “INNOVATE TO ACCELERATE”

The 2017 annual meeting of the Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD) was held November 3 & 4, 2017, in Baltimore, MD.

Total Attendance: 462
Participating Organizations: 106
Countries Represented: 44
Innovations Presented: 14

Breakout Sessions:

**Lymphatic Filariasis**
- Challenges in Post-Validation Surveillance (PVS)
- Disease Management in Filarial Lymphedema and Podoconiosis – possibilities for integration?
- Transmission Assessment Survey (TAS) Strengthening: Data Review and Analysis

**Onchocerciasis**
- Addressing the Challenge of Oncho and Loa Co-endemicity
- Operational Research Priorities for Onchocerciasis Elimination

**Schistosomiasis**
- Non-responsive Schistosomiasis and STH Areas
- Integrating LF MMDP Activities into National Public Health Systems

**SOIL-TRANSMITTED HELMINTHIASIS**
- Access for Women of Reproductive Age (WRA) to Deworming: Exploring Platforms
- School vs Community Deworming for STH: Benefits, Cost-effectiveness, and Feasibility

**Schistosomiasis & Soil-Transmitted Helminthiasis (STH)**
- M&E for Effective STH and Schistosomiasis Programs
- Non-responsive Schistosomiasis and STH Areas

**Intensified Disease Management (IDM) Diseases**
- Innovations in Interrupting Leprosy Transmission
- A Multi-Criteria Decision Analysis Approach to Scaling up Healthcare for Chagas Disease
- Integrated Approaches to Neglected Tropical Diseases Involving the Skin

**Cross-cutting**
- Achieving NTD Program Goals in Urban Settings
- Changing, Sustaining, and Measuring WASH-related Behaviors in Integrated Programs
- Connecting the Dots in the Implementation of PC-NTD Elimination
- Data Use for Decision Making: Barriers and Successes
- Identifying a Research Agenda for NTD-related Stigma and Mental Health Care
- Innovative Strategies to Increase Compliance
- Modelling and Programs: A Love-Hate Relationship
- Quality Assurance for NTD Diagnostics and Laboratories
- Use of Multiplex Technology to Innovate Public Health Surveillance in the Americas
- WASH Benefits: Results and STH Program Implications

**Trachoma**
- A Priority Research Agenda for GET2020
- Post-trichiasis Surgery Follow-up: Experiences and Lessons Learned

**Lymphatic Filariasis**
- Shrinking the Map for Schistosomiasis

To view the knowledge gaps and recommended next steps identified at the 2017 meeting, visit [bit.ly/CORNTD17](bit.ly/CORNTD17)

ANNUAL COR-NTD MEETING 2018: “ENGAGE TO ELIMINATE”

The 2018 annual meeting of the Coalition for Operational Research on Neglected Tropical Diseases (COR-NTD) was held October 26 & 27, 2018, in New Orleans, LA.

Total Attendance: 412
Participating Organizations: 178
Countries Represented: 44
Innovations Presented: 11

Breakout Sessions:

**Lymphatic Filariasis**
- Can the Loascope Be Successfully Used in the Community?
- Gaps in our Understanding of Onchocerciasis-Associated Epilepsy
- Threshold for Stopping MDA for Onchocerciasis: Time for a Change?

**Onchocerciasis**
- How Can Current Lymphatic Filariasis and Trachoma Survey Data Influence Policy?

**Schistosomiasis & Soil-Transmitted Helminthiasis (STH)**
- How Can Current Lymphatic Filariasis and Trachoma Survey Data Influence Policy?

**Schistosomiasis**
- Shrinking the Map for Schistosomiasis

To view the knowledge gaps and recommended next steps identified at the 2018 meeting, visit [bit.ly/CORNTD18](bit.ly/CORNTD18)
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<th>ACRONYMS</th>
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<td>Acute Dermato-Lymphangio-Adenitis</td>
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<td>AFENET</td>
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<td>World Health Organization Regional Office for Africa</td>
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<td>EHNRI</td>
<td>Ethiopian Health and Nutrition Research Institute</td>
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<tr>
<td>ELISA</td>
<td>Enzyme-Linked Immunosorbent Assay</td>
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<tr>
<td>EPHI</td>
<td>Ethiopian Public Health Institute</td>
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<tr>
<td>ESACIPAC</td>
<td>Eastern and Southern Africa Centre for International Parasite Control</td>
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<tr>
<td>FHF</td>
<td>The Fred Hollows Foundation (Australia)</td>
</tr>
<tr>
<td>FTS</td>
<td>Filariaeisis Test Strip (Alere/Abbott)</td>
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<tr>
<td>FY</td>
<td>Fiscal Year</td>
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<td>HDI</td>
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<tr>
<td>iChord</td>
<td>Improving Community Health Outcomes through Research and Dialogue</td>
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<tr>
<td>ICT</td>
<td>Immunochromatographic Test</td>
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<tr>
<td>IDA</td>
<td>Ivermectin, Diethylcarbamazine, and Albendazole (Triple Drug Therapy)</td>
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<td>IMA</td>
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<tr>
<td>IPN</td>
<td>Instituto Politécnico Nacional (Mexico)</td>
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<tr>
<td>IRD</td>
<td>Institut de Recherche pour le Développement (France)</td>
</tr>
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<td>IRSS</td>
<td>Institut de Recherche en Sciences de la Sante (Burkina Faso)</td>
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<td>ISCCII</td>
<td>Instituto de Salud Carlos III (Spain)</td>
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<tr>
<td>iTAS</td>
<td>Integrated Transmission Assessment Survey for Lymphatic Filiariaisis and Onchocerciasis</td>
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<tr>
<td>IZI</td>
<td>The Fraunhofer Institute for Cell Therapy and Immunology (Germany)</td>
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<td>JHU</td>
<td>Johns Hopkins University (USA)</td>
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<td>JKUAT</td>
<td>Jomo Kenyatta University of Science and Technology (Kenya)</td>
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<td>KCMC</td>
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<td>KCCO</td>
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<td>KEMRI</td>
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<td>KTP</td>
<td>Kongwa Trachoma Project (Tanzania)</td>
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<td>LF</td>
<td>Lymphatic Filariaisis</td>
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<tr>
<td>LSHTM</td>
<td>London School of Hygiene &amp; Tropical Medicine (UK)</td>
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<td>M&amp;E</td>
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<td>MMMDP</td>
<td>Morbidity Management &amp; Disability Prevention</td>
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<td>OCP</td>
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<tr>
<td>OEM</td>
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<td>OV</td>
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<td>Acronym</td>
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<td>OR</td>
<td>Operational Research</td>
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<tr>
<td>OTS</td>
<td>Onchocerciasis Technical Subgroup (WHO)</td>
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<tr>
<td>PATH</td>
<td>Program for Appropriate Technology in Health (USA)</td>
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<tr>
<td>PC</td>
<td>Preventive Chemotherapy</td>
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<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<td>QA</td>
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<td>RAPLOA</td>
<td>Rapid Assessment for Loa loa</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>Washington University in St. Louis (USA)</td>
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</table>
The secretariat for COR-NTD is the Neglected Tropical Diseases Support Center at The Task Force for Global Health.