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recommendations to the appropriate levels of government leadership. The ministry's guidance is essential for determining the appropriate structure, size and role of the committee to effectively accomplish its TOR. Partners, WHO, and international experts often collaborate when developing the TOR. A list of elements that could be part of a NOEC's TOR are included in Box 1.

A key feature of the TOR is a clear definition of the committee's roles and responsibilities. For instance, NOECs could assess the status of and provide guidance for subnational (state or district) programming. The NOEC could recommend more frequent rounds of MDA, or investment in the WHO-stipulated serological and entomological assessments needed for the stop MDA decision. To help direct the program, the committee may describe how it would want to see data organized and analyzed. The NOEC should feel at liberty to recommend additional surveys and programmatic adjustments where necessary to supplement existing data.

The TOR should cover the frequency of the meetings, disposition of reports, press releases, administrative responsibilities for arranging committee members' travel, per diem and honorarium policies, and financing. The TOR is also critical in establishing the secretariat of the committee, and maintaining institutional memory and reporting channels even when personnel change over time.

Status of Onchocerciasis Transmission by Focus in Uganda
The Uganda "Oncho Flag"

Dark Green	= Eliminated
Light Green	=Transmission Interrupted
Greyish Green	=Interruption Suspected
Red	=Transmission Ongoing

No.	Focus	Vector	District	# MDA annual rounds	# of MDA semi annual

(when present), relevant national or international cross-border issues, and any pertinent extraordinary considerations (e.g., research, security, migration, staffing, culture or geography). Committee recommendations are grouped into the general and the specific, the latter concerning subnational, even district-level, details. As the program progresses, flag colors evolve to reflect progress from active transmission (for example, red) toward elimination (here, green—see Figure 2). The NOEC may recommend the program focuses on areas where 'quick wins' can be achieved to build confidence and enthusiasm, while not ignoring the most difficult scenarios.

Operational research and laboratory support

Discussion amongst NOEC members and observers can identify what operational research is needed and prioritize specific areas for these special activities. In such circumstances, ministry buy-in will be essential to ensuring that the work is completed in a timely fashion. Presentation of results at future committee meetings is a valuable learning opportunity and provides motivational experience for local staff. Some of the operational research proposed by the committee may address matters relevant to other countries, or to WHO scientific committees developing regional or international policy. The international representatives on NOECs

can convey these methods and findings to the broader community, as well as bring back useful insights to their NOEC from other contexts.

Laboratory-based tests are essential for making the decision to stop MDA and for verification. Ensuring access to reliable and quality laboratory services for PCR and ELISA should be considered early on by the NOEC.[4] While regional and international reference laboratories are crucial for quality control and expert-

Table 1. Four examples of national onchocerciasis elimination committees

	Ethiopia	Guatemala	Nigeria	Uganda
Meeting frequency	Annually	Every trimester	Semi-annually	Annually
Year established	2014	2014	2015	2008
Leadership	• Chair is non-Ethiopian and an international expert. • Co-secretaries are NTD coordinator and the country representative from the Carter Center (who is responsible for funding, in-country travel, meeting logistics); both are non-voting members. • Supporting NGOs (the Carter Center and Lions) are responsible for funding the committee meetings.	• Chair is Guatemalan and the director of vector-borne diseases of the MoH. • Secretary is from the MoH Vector Borne Disease Section. • Supporting NGO (the Carter Center/OEPA) assists in logistical support for the committee meetings.	• Chair is Nigerian and an international expert. • Secretary is from the FMOH onchocerciasis program. • Supporting NGOs (the Carter Center, RTI/ ENVISION and Sightsavers) are responsible for co-funding and travel related to the meeting. The Carter Center and FMOH are responsible for logistics in support of the committee meetings.	• Chairs have been non-Ugandan international experts. • Co-secretaries are national onchocerciasis program coordinator (who has voting power in some cases) and the country representative from the Carter Center (responsible for funding, in-country travel and meeting logistics). • Supporting NGOs (The Carter Center, Sightsavers and RTI/ENVISION) are responsible for funding and international travel.

documentation well in advance, and coaching the presenters when necessary. Carter Center staff often assist the MoH in this process. Although challenging, the result is an efficient and effective meeting that generates meaningful recommendations.

Interaction of the NOEC with other programs and partners

The NOEC agendas frequently include time for 'updates from partners', during which concise, but informative presentations can be made by WHO, NGO partners, researchers, donors and the Mectizan Donation Program. Important updates from the MoH focal person for lymphatic filariasis (LF) should be made concentrating on where LF and onchocerciasis are co-endemic, since both programs

engaged with NOECs in four countries by providing important co-secretariat, financial and logistical support for the committee meetings. A summary of key features of these four countries' committees is provided in Table 1.

Uganda

Uganda'

meeting. The EOEEAC is tasked with providing the FMOHE with a roadmap to nationwide interruption of onchocerciasis transmission by 2020. In its first three meetings, the EOEEAC:

- developed national guidelines for rapid assessments using Ov16 antibody testing for the phases leading up to stopping MDA, per WHO elimination guidelines;
- recommended that Ethiopia broadly institute twice-per-year MDA in all newly discovered and untreated areas with active transmission;
- advised that the program switch from annual to twice-per-year treatments in all areas where slow progress will preclude reaching the goal of elimination by 2020.

The second two recommendations resulted in a dramatic transition from once- to twice-per-year MDA for onchocerciasis in Ethiopia (Figure 4).[16] The committee also helped develop standard operating procedures using Ov16 antibody testing in order to complete nationwide mapping in hypoendemic areas of the country.[4] The EOEEAC recommended entomological surveillance to identify areas that might require pilot vector control studies. Lastly, the EOEEAC helped the Ministry establish the work stream for the new onchocerciasis molecular laboratory at the Ethiopian Public Health Institute by developing priorities for specimen collection and testing based on the urgency of decisions to be made.

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