



Evaluating the impact of 17 years of annual Ivermectin mass drug administration in the Mahenge onchocerciasis transmission focus in Tanzania

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Introduction

The Tanzania NTD Control Program's (TZNTDCP) goal is to eliminate onchocerciasis (OV) by 2025 in line with World Health Organization (WHO) targets, and as guided by the updated WHO guidelines for OV elimination.

OV is considered endemic when disease prevalence in a specified area is at or above 1%. OV is endemic in seven foci across 28 districts in six regions in Tanzania. By 2017, all districts had received 10 to 17 rounds of Ivermectin mass drug administration (MDA) with effective coverage.

Method

Four districts in Morogoro region make up the Mahenge focus area.

In 2017 in Mahenge focus, the TZNTDCP evaluated the impact of 17 rounds of annual ivermectin MDA in the four districts by surveying the prevalence of OV among children 6 to 9 years old.

Purposively, a total of 7 first-line villages (that are close to the known simulium breeding sites) were selected. At each village, the sampling universe was constructed from household registers for systematic sampling.

A total of 1799 children were tested using the OV16 RDT that detects IgG4 antibodies against the OV16 antigen in human blood samples. Dry blood spots were also collected for further OV16 ELISA testing.

OV16 RDT tests were completed in the field following manufacturer guidelines and results were provided to participants immediately.

Results

Prevalence of Onchocerciasis

- A baseline assessment onchocerciasis conducted in 1997 indicated nodule prevalence of 45% and 95% in Kilombero and Ulanga districts respectively.
- An epidemiological assessment (APOC phase 1a) conducted in 10 villages in 2009 reported prevalence of microfilaridemia of up to 22% (range 0% -21.94%, mean of 8.3%).
- In 2017, following completion of 18 rounds of MDA, a monitoring survey was conducted using OV16 RDT to gauge infection level in children aged 6 to 9 years.

Figure 1. Epidemiological coverage trends for Mass Drug Administration 1997 to 2018

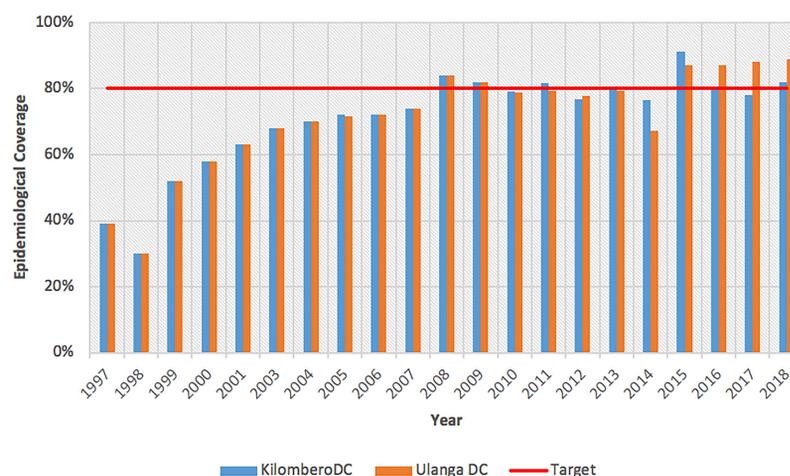


Figure 2. Prevalence of microfilaridemia using skin snip microscopy, APOC Phase 1a epi survey in 2009

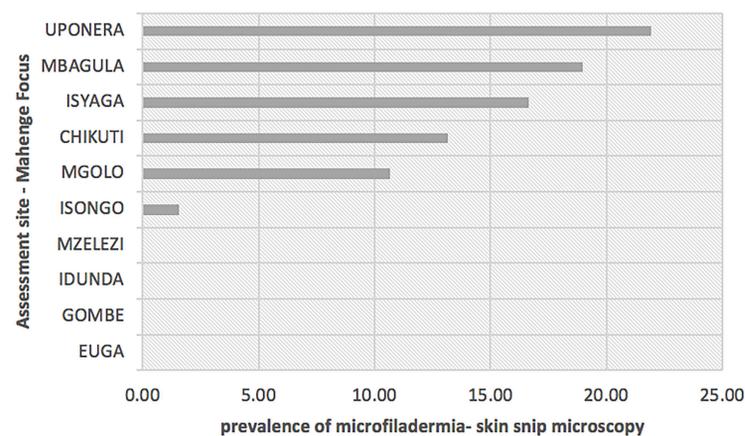
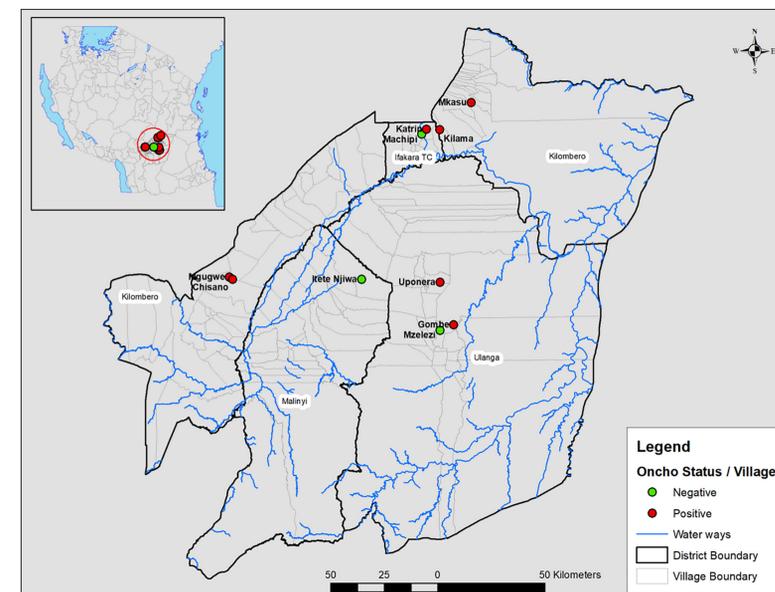


Figure 3. 2017 Onchocerciasis Monitoring, Mahenge focus



Prevalence of positive OV16 RDT tests ranged from 0%-5.8% across all test sites. Overall, 33 out of 1799 children tested (1.8%) were positive. Mgugwe and Uponera villages reported the highest (5.8% and 4.1% positive children respectively).

Conclusion

The data indicates a significant reduction in infection levels from the 1997 baseline survey to the 2009 phase 1a evaluation, to the monitoring results of the 2017 survey. This corresponds with an increase in MDA coverage from 1997 to 2018.

However, despite all of these rounds of MDA, there is ongoing transmission of infection among the communities, as children born well after the treatment program started are still being infected. While there remains a need to investigate the validity of high reported MDA treatment coverage and the status of infection in the vectors (black flies), the OV16 ELISA testing results from the 2017 survey will further inform the program on proper strategies to accelerate OV elimination for all OV endemic districts in Tanzania.

Acknowledgements

