

Executive Summary

Introduction Xenomonitoring: Sampling issues for Lymphatic Filariasis

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The current decision processes for deciding to start or stop MDA involve measuring some prevalence indicator in a population and deciding whether or not a defined starting or stopping threshold has been achieved. These processes have drawbacks, but have provided practical guidance for program managers to date, although the transmission assessment survey (TAS), used for the decision to stop, is proving expensive and questions remain about the size of the geographic area it should encompass. No similar thresholds in mosquitoes are generally accepted, however, and at present, the most promising use of xenomonitoring is for measuring changes in prevalence after MDA has been stopped.

Measurement of such changes requires a replicable method of sampling mosquitoes. This is most conveniently done by obtaining mosquitoes within or outside of households randomly selected with population proportional to size, with the proviso that for *Aedes*, an outdoor feeder, an alternate choice might be preferable. A household sampling method has been developed and used in surveys for *Culex* conducted in Pondicherry and Colombo. Despite some initial challenges posed by the need to find the selected households and to move the traps frequently, it has proved both feasible and replicable. In Sri Lanka, the post-MDA prevalence estimated in the initial sampling was 0.3%. For follow-up, sample sizes of 10-15,000 should permit increases to 0.45% or more to be detected 80% of the time with a 5% risk of falsely finding such an increase. Fewer numbers are likely to be required for *Anopheles* and larger numbers for *Aedes*.

Cost comparisons between the TAS and xenomonitoring surveys have not yet been systematically measured but initial estimates suggest that the TAS may be completed for less than \$12,000 and *Culex* sampling for somewhat less. Both are highly dependent on the costs/team/day. Xenomonitoring may pose fewer administrative burdens (especially in seeking permissions) than the TAS.

Suggestions for future work include monitoring changes in prevalence, especially in conjunction with the TAS, including the investigation of approaches for assessing large geographic areas; assessing the use of anthropophilic *Culex* as a surrogate for other vectors; the further assessment of transmission thresholds for the vector species; the improvement of collection methods and simplification of sampling methods; support for bringing new technologies to commercial production at affordable prices; and supporting national capacities to utilize them.