Addressing the Challenge of Oncho and Loa Co-endemicity

Session Date: Friday, November 3

Session Time: 1:00pm – 4:00pm

Session Location: Severn III

Session Description: The aim of this session is to discuss with those completing current research projects the application of their analysis on the treatment possibilities for hypoendemic onchocerciasis in Loiasis endemic areas with the hope of an eventual scale up of treatment and elimination of onchocerciasis. The discussion should lead to recommendations for the M&E working group of the WHO STAG and the Mectizan Expert Committee for the preparation of safe evidence based strategies to propose to endemic countries to achieve elimination of onchocerciasis in these co-endemic regions.

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KEY DISCUSSION POINTS

- The test and (not) treat (TaNT) project uses LoaScope to test all individuals in co-endemic communities and excludes those with high-intensity (>20,000 mf/ml) infections from ivermectin treatment.
- TaNT was implemented in the Okola district in Cameroon in both 2015 and 2017 (18 months apart).
    - Only about a quarter of individuals treated in 2015 matched with individuals tested and treated in the same communities in 2017. Self-report was not a reliable predictor of whether the individual was previously treated.
    - No one known to be treated in 2015 had a high-intensity Loiasis infection in 2017.
    - Of 113 people excluded from ivermectin treatment in 2015 due to high-intensity infection, 45 (39%) were eligible in 2017. Many of these eligible individuals were either children or adults over age 50.
    - It is not necessary to retest people who have previously been tested and treated in the TaNT program. However, individuals who have not been tested or have tested above the treatment threshold should be tested before first treatment.
- In areas meso- or hyper-endemic for oncho, endemic for Loiasis, and currently under ivermectin treatment, TaNT could reduce systematic non-compliance due to fear of serious adverse events (SAEs).
- Dr. Diggle developed a mathematical model that uses Loiasis prevalence and intensity in a sample to determine probability that it is safe to treat a community with ivermectin.
    - A relationship between prevalence and intensity has been demonstrated.
    - The model can be adapted to the level of risk that the community will accept.
    - The model can be used with either microscopy or LoaScope data

- Dr. Kamgno's group performed a validation of Dr. Diggle's model
    - Phase 1 of study used the model to estimate probability that it was safe to treat; phase 2 validated the model with a larger sample.
    - Of 29 clusters, none were identified as safe to treat in phase 1 and found to be unsafe in phase 2.
    - However, due to model calibration, some high intensity infections were found in communities determined to be safe to treat.
- Dr. Biamonte developed a rapid diagnostic test (RDT) to detect the presence of Loa antibody
    - This test is about 5 times more sensitive than LoaScope; therefore, a smaller sample size is needed to determine the presence of Loa. The test indicates the presence of Loiasis in a community but does measure intensity. As it is an antibody test it can be used at any time of day unlike the Loascope which is restricted.
    - This test has the potential to "shrink the map" by determining which communities/districts are free of Loa and do not require additional testing.
- Ideally, every individual in areas with hypo-endemic oncho and co-endemic Loa would be tested with LoaScope before their first treatment with ivermectin. However, this might be cost prohibitive. A strategy of treatment using the community members to conduct TaNT is under testing in Cameroon.
- The serological test might be sufficient in areas where Loa endemicity in uncertain.
- In areas known to have high levels of Loa, TaNT might be necessary.
- In some areas, the model may provide sufficient information to eliminate need for TaNT.
- Mapping of hypo-endemic oncho would also limit the number of places in which this is an issue.

KNOWLEDGE GAPS IDENTIFIED

- A more reliable method of tracking people tested in TaNT is needed to avoid the unnecessary time and expense of retesting people every year. (Village treatment books would probably give the best record but this needs to be tested)
- TaNT could be a useful tool to reduce systematic non-compliance in meso-/hyper-endemic areas in which people are afraid of Loa-associated SAEs; field testing of this idea is needed.
- It is unclear whether it is economically feasible to implement community-based TNT on a large scale. Cost studies should be conducted, based particularly on the ongoing studies in Soa, Cameroon.
- Due to time constraints, TaNT may result in lower treatment coverage than optimal. It is necessary to determine a compromise of time versus coverage as it will be difficult to keep returning to test absent people
- The model currently uses a threshold of 95% probability that less than 1% of the population has high intensity Loa infection. Is this a threshold that the community can accept, or should a different threshold be used? It is not possible to determine with 100% certainty that no high-intensity Loa infections exist without testing every individual treated.
- The model does not currently take into account spatial correlation, household-level clustering, familial correlation, or geographic features. Adding these could improve precision of the model.
- The serologic test is currently being evaluated. Data from low-prevalence settings have been collected and analysis is on-going. To use the serologic test to rule out Loa in low-prevalence settings, it is important to understand how the test performs in these settings. This could be used to "shrink the Loa map" to avoid costly TaNT strategies where there is no need.

- The community has not come to consensus on what level of risk of loa related SAE is acceptable in the context of oncho elimination.

RECOMMENDED NEXT STEPS

- Prioritize hypo-endemic oncho mapping particularly in Loa coendemic areas: this will shrink the population in need of oncho treatment.
- Further operational research on performance of the serologic test in areas with low or no Loa prevalence should be conducted. This could eventually lead to a step wise process of mapping for Loiasis, using remote sensing, serology, and TaNT.
- Dr. Diggle's model should be refined to include additional indicators that may improve precision.
- Feasibility of implementing TaNT on a large scale in a variety of settings should be evaluated. Costs and benefits of lower treatment coverage should be considered.
- TaNT should be piloted in a setting with on-going treatment and systematic non-compliance due to fear of SAEs to assess benefits of implementing in such a setting.
- The acceptable level of Loa related SAE risk in oncho elimination programs should be debated with ethicists and public health physicians and including representatives from endemic countries and also including pharma so that clear guidance can be given to program managers.