(MDA), the primary intervention for LF elimination, relies on estimates of infection prevalence obtained through a multi-year strategy of baseline mapping, longitudinal sampling in sentinel sites, transmission assessment surveys (TAS), and post-MDA surveillance. High-resolution geospatial models can leverage existing sources of LF prevalence data to predict prevalence in data-poor regions and identify priority locales for additional data collection. While LF monitoring programs may emphasize sampling in areas expected to have particularly high or low prevalence, depending on programmatic stage, standard geospatial models assume that data are collected non-preferentially, i.e., that survey sites are sampled independently of their expected prevalence. Failing to account for this preferential sampling may bias model inferences. In order to improve global estimates of LF prevalence, we test for evidence of preferential sampling in Bayesian spatiotemporal models of global LF prevalence. We compare inferences from three models: (1) a standard model assuming non-preferential sampling; (2) the addition of simple fixed effects for programmatic stage (e.g., mapping, sentinel site, or TAS); and (3) an explicit preferential sampling model employing Poisson point processes for spatial sampling probabilities. We compare model predictions in both heavily sampled and undersampled regions and discuss implications for LF elimination programs and for other neglected tropical diseases with similarly complex data generation.

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IMPACT OF REPEATED ANNUAL MASS DRUG ADMINISTRATION WITH IVERMECTIN THROUGH COMMUNITY DIRECTED TREATMENT ON THE ENTOMOLOGICAL INDICATORS OF *LOA LOA* TRANSMISSION IN CAMEROON

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Loiasis is a filarial infection endemic in the rainforest zone of west and central Africa. Repeated treatments with ivermectin have been delivered using the annual community directed treatment with ivermectin (CDTI) approach for several years to control onchocerciasis in some *Loa loa-Onchocerca volvulus* co-endemic areas. The impact of CDTI on *L. loa* transmission in those areas is not known. We, therefore, designed this cross-sectional study to assess the impact of several rounds of CDTI on entomological indicators of loiasis. The study was conducted in 3 CDTI projects of Cameroon. Two communities per CDTI project were selected. *Chrysops* were collected with sweep net and dissected using microscopy. A total of 7029 female *Chrysops* were collected from the 6 communities under study. *Chrysops* biting densities and parous rates were reduced significantly in the northwest and southwest sites post CDTI while in the east, biting densities were similar in CDTI and nonCDTI sites with higher parous rates in the nonCDTI area. Infection and infective rates in the East nonCDTI site were 4.4% and 1.8% respectively but 3.3% and 1.3% in the CDTI district with 8 ivermectin treatment rounds. In the Northwest site, significant reductions of *Chrysops* infection and infective rates from 10.2% and 4.2% respectively to 3.5% and 1.2 (after 9 ivermectin rounds) were registered post CDTI while in the southwest, infection rates significantly increased from 1.74% to 2.8% and infective rates remained statistically unchanged after 14 rounds of CDTI (0.45% - 0.40%). Similar trends in Mean Head L3 were observed in all but the east CDTI site. Globally, a negative relationship was observed between the number of CDTI rounds and *Chrysops* infection and infective rates. Monthly transmission potentials significantly decreased after CDTI only in the northwest sites. This study has for the first time demonstrated that in areas where onchocerciasis and loiasis are co-endemic, CDTI has reduced the number of *Chrysops* carrying infective larvae with concomitant decrease in *L. loa* monthly transmission potentials; but has not interrupted transmission of loaisis.

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INDIVIDUAL RISK OF POST-IVERMECTIN SEVERE ADVERSE EVENTS IN INDIVIDUALS INFECTED WITH *LOA LOA*

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Implementation of onchocerciasis and lymphatic filariasis elimination programs has been delayed in Central Africa because of the risk of post-ivermectin severe adverse events (SAEs) in people with high *Loa loa* microfilarial densities (MFD). The incidence rate of SAEs (i.e. with a functional impairment requiring for at least one week full-time assistance) has been assessed in some settings and the relative risk, compared to subjects without *Loa* microfilariae (mf), of developing a SAE or a marked reaction (with functional impairment for several days) for increasing *Loa* MFD has been evaluated. However, the individual predicted risk of SAE for a given *Loa* MFD is unknown. To estimate this individual risk, as well as the MFD for which the predicted risk of SAE is 1/1,000 and 1/100, we used information from two trials conducted in Cameroon: one in 1997 in the Lekie division (Central region), and the other in 2005 in the Lom-et-Djerem division (East region). We performed mixed multivariable logistic models using fractional polynomials for age and pre-treatment *L. loa*, and *Mansonella perstans* MFD and category for sex. The models included a random effect on the village of residence. All possible interactions were tested. Among the 10,506 trial subjects treated with ivermectin (males: 48.9%, mean age: 35.4 years), 38 developed an SAE, including two cases of coma. A total of 2,792 (28.3%) subjects were microfilaremic for *L. loa*. The results showed a higher risk of SAE in males and in subjects with high *L. loa* MFD and no significant association with age and *M. perstans* MFD. This statistical modeling allows for predicting individual risk of SAE for a given *L. loa* MFD: subjects with 10,000 mf/ml and 27,000 mf/ml have a risk of 1/1,000 and 1/100, respectively, to develop a SAE following ivermectin treatment. These results can help to better predict the risk of post-ivermectin SAE in communities where the distribution of *L. loa* MFD has been assessed, for example during mapping activities.

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THE EFFECT OF ALBENDAZOLE TREATMENT ON *LOA LOA*: A SYSTEMATIC REVIEW, META-ANALYSIS AND MODELLING STUDY

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Increasing evidence suggests that loiasis (caused by the filarial nematode *Loa loa*) poses a significant public health threat to the estimated 10 million infected individuals across Central Africa. Treatment of the disease is complex: although the anti-parasitic drugs diethylcarbamazine and ivermectin are highly efficacious at clearing the infection, they cannot be administered to individuals with heavy microfilarial loads, due to the

Chesnais Cédric, Pion Sébastien, Gardon Jacques, Gardon-Wendel N., Fokom-Domgue J., Kamgno J., Boussinesq Michel.

Individual risk of post-ivermectin severe adverse events in individuals infected with Loa loa.

American Journal of Tropical Medicine and Hygiene, 2019, 101 (Suppl. 5), p. 559-559.

ISSN 0002-9637

Annual Meeting of the American Society for Tropical Medicine and Hygiene (ASTMH), 68., 2019/11/20-24, National Harbor