Technical Consultation summary, Lancaster, March 2024

Summary report of "Technical Consultation on Model-Based Geostatistics (MBG) to Inform Trachoma Elimination Decision-Making"

Trachoma is targeted for elimination as a public health problem by 2030. Since 2012, the Global Trachoma Mapping Project (GTMP) and its successor, Tropical Data, have supported high-quality trachoma surveys estimating the prevalence of trachomatous inflammation—follicular (TF) and trachomatous trichiasis (TT). Current challenges facing trachoma programmes include limited resources, districts with persistent and recrudescent TF, and the estimation of TT in low prevalence settings. New tools or approaches, such as model-based geostatistics (MBG), could offer solutions to these challenges and help with the achievement of the global trachoma elimination targets. MBG is a statistical modelling framework that enables the efficient use of spatially sparse cross-sectional data, and has been used for mapping the risk of numerous neglected tropical diseases (NTDs).

From 4–5 March 2024, a technical consultation was convened by the WHO Collaborating Center on Geostatistical Methods for NTD Research at Lancaster University, UK, to:

- review previous use of MBG and explore potential future uses in the context of trachoma elimination;
- discuss ongoing studies;
- frame key questions on MBG use and outputs;
- identify knowledge gaps to plan future work.

Participants included trachoma elimination programme managers from endemic countries, disease experts, academics, programme implementation partners, donors, statisticians, and mathematical modellers.

Background information was provided on the rationale for using MBG to assess trachoma elimination, including case studies demonstrating improved precision of TT prevalence estimates and the wide applicability of MBG in a range of epidemiological settings. Factors that need to be considered before MBG can be implemented on a wider scale were also presented to attendees to encourage discussion and identify the next steps required to progress with using MBG for trachoma elimination purposes. These included the use of spatially referenced covariates, how risk metrics generated by MBG should be used to inform the assessment of elimination, and the criteria for determining when using MBG is feasible.

The discussions amongst attendees highlighted important questions that need to be addressed. The first key question relates to the complication of using two different approaches (i.e., the current standard methods and MBG methods) concurrently, as the optimal MBG sample size and cluster selection method may be different from those used in the standard approach; it must be determined if an MBG survey design can be used with the standard data analysis method. The second key question was when to use MBG, with many factors to consider when making

this decision, including whether the standard data analysis method can still be used, who would run the MBG analyses, and what the criteria would be for using it in specific cases.

The technical consultation highlighted that more research is needed before MBG can be offered as a standardised survey design and analysis tool for trachoma surveys using Tropical Data. Support is required to answer the research questions outlined above, and further technical workshops will be critical to make decisions regarding risk thresholds and appropriate use cases of MBG. At present, Tropical Data does not have the capacity to routinely offer MBG, however anyone interested in participating in trachoma-MBG research activities can contact Lancaster University directly (e.giorgi@lancaster.ac.uk).