Accelerating trachoma elimination through 'Stronger-SAFE'

Dr Anna Last, London School of Hygiene & Tropical Medicine

Find out more:

What is the research?

The five year, Wellcome Trust funded 'Stronger-SAFE' research programme aims to use cutting edge molecular tools alongside detailed clinical, epidemiological, observational and entomological methods to try to better understand and define transmission of trachoma and to develop and test novel, contextually appropriate interventions to interrupt transmission, accelerating the elimination of trachoma as a public health problem, particularly in highly endemic communities in Ethiopia. The programme is a collaboration between the London School of Hygiene & Tropical Medicine, the Federal Ministry of Health in Ethiopia, the Oromia Regional Health Bureau, the Wellcome Trust Sanger Institute, Monash University (Melbourne, Australia) and The Fred Hollows Foundation. The programme aims to build technical capacity in Oromia, including the establishment of a molecular laboratory for *Chlamydia trachomatis (Ct)* diagnostic testing of conjunctival samples.

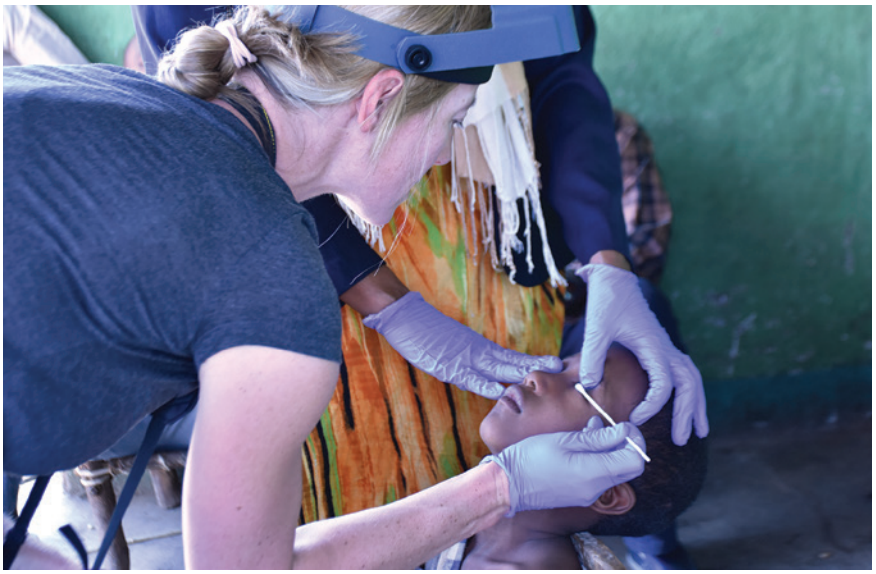
Stronger-SAFE phase one sought to improve our understanding of potential transmission routes. Our field research team collected swabs from eyes, faces, hands, clothing, bed linen, a variety of household objects and eye-seeking flies captured from the faces of young children and tested these samples for the presence of *Ct*. We found *Ct* on faces, hands and some clothing. Eye-seeking flies (*Musca Sorbens*) are thought to be a passive vector for trachoma. This was the first study to demonstrate the presence of *Ct* on *M. sorbens* flies caught from the faces of children in Oromia. Stronger-SAFE phase two involves developing approaches to interrupt these transmission routes. Following detailed observational research we are focusing on hand and face washing to remove *Ct*-carrying discharge from faces and hands, headwear repellent to *M. sorbens* and odour-baited traps to prevent *M. sorbens* breeding near households.

Why is this research necessary?

Trachoma is the world's leading infectious cause of blindness, affecting 142.2 million people globally. It is caused by repeated conjunctival infection by the bacterium *Ct* and remains a significant public health problem in Ethiopia, which accounts for 44% of the global burden, despite years of implementation of the SAFE strategy for trachoma elimination. The SAFE strategy involves **S**urgery for trichiasis, **A**ntibiotics (azithromycin) to treat *Ct* infection, **F**acial cleanliness and **E**nvironmental (F&E) improvements to suppress transmission. It is unclear which, if any, F&E measures currently applied programmatically suppress transmission. There is growing evidence that current approaches are not having the anticipated impact on infection and disease. This is a significant threat to the timely elimination of trachoma.

What is the research impact?

We have shown that discharge (and *Ct*) can be more effectively removed when faces are washed with soap than when they are washed with water only. We have just completed a clinical trial of insect repellent headwear to keep eye-seeking flies away from children's faces and are exploring the use of traps to reduce eye-seeking flies from the environment. The final F&E intervention package will be tested in a cluster randomised trial in Stronger-SAFE phase three and will include face washing promotion, prototype 'fly-repellent headwear' (caps and scarves) and a fly trap. This 'enhanced' F&E package in addition to double dose azithromycin will form the 'Stronger-SAFE' strategy, which will be compared to 'standard' SAFE implementation in the clinical trial.



Collecting conjunctival swabs to test for Chlamydia, the infectious agent of trachoma. Photo credit: Nazif Jamal