Controlling Emergent *Anopheles stephensi* in Ethiopia and Sudan (CEASE)

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An. stephensi: a threat to malaria elimination in sub-Saharan Africa

- The Asian malaria vector *An. stephensi* has recently been discovered in the Horn of Africa.
- Invasive *An. stephensi* associated with increases in malaria in Djibouti.
- Competent for both *Plasmodium falciparum* and *P. Vivax*.
- Predominantly associated with container habitats common in rapidly urbanising settings.
Research will adopt a transdisciplinary approach.
Vision and Key Research Questions

**Vision:** Control the spread of *An. stephensi* in Ethiopia and Sudan.

1. What was / are the route(s) of invasion of *An. stephensi* and what is its current and potential future distribution?
2. What is the importance of *An. stephensi* for malaria transmission in the Horn of Africa?
3. What are the most effective targeted, multi-sectoral vector control strategies to combat further spread?
Work package 1

Overall Aim: Identify the route of invasion of *An. stephensi* and its current and potential distribution

- Implement **entomological surveillance networks** using ecologically informed adaptive sampling frameworks.
- Investigate **bionomics** of invasive *An. stephensi* (blood meal composition, sporozoite rates, flight distance, insecticide resistance etc)
- Update and validate **predictive distribution maps** enabling us to identify habitats permissive to *An. stephensi* establishment.
- **Genomic surveillance** of *An. stephensi* invasion and spread.

Co-Leads:
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- Luigi Sedda (Uni Lancaster)
Work package 2

**Overall Aim:** Estimate the importance of *An. stephensi* for malaria transmission

- Spatio-temporal analysis of routine malaria morbidity data (DHIS2) and entomological data countrywide.
- Case control study to investigate the association between malaria and *An. stephensi* presence/density in urban centres.
- Identification of the spatial distribution of malaria cases and potential for focal screening and treatment.
  - Mathematical modelling of the contribution of *An. stephensi* to malaria transmission

**Co-Leads:**
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Work package 3

**Overall Aim:** Evaluate multi-sectoral vector control strategies to combat the spread of *An. stephensi*

- Mixed methods research to understand social and ecological context.
- Identification of factors that could constrain or enhance effectiveness of existing and novel vector control strategies;
- Pilot studies to determine the entomological efficacy of existing and novel multisectoral vector control strategies.
- Modelling of the public-health impact and cost effectiveness of vector control strategies.

**Co-Leads:**
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Thank you for listening and please get in touch

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