CEMA
Center for Epidemiological Modelling and Analysis

UNIVERSITY OF NAIROBI

MRC Centre for Global Infectious Disease Analysis

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Malaria Vaccine Group

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Introduction

Background information

- Malaria, caused by the protozoan parasite Plasmodium *falciparum*, is transmitted to humans by the bite of an infected female mosquito Anopheles
- Malaria is a major public health issue, affecting 75% of the population, causing 6.7 million cases and 4,000 deaths annually.
- The Government of Kenya, in collaboration with its partners, has made progress in reducing the malaria burden among its 52.4 million population.
- The malaria vaccine was introduced in Kenya in 2019 through a pilot program in 8 counties, implemented in 26 selected sub-counties in the lake endemic malaria zone from October 2019 to February 2023.

Background Information Contd

- The counties that constitute the lake endemic malaria zone include Busia, Kakamega, Bungoma, Vihiga, Kisumu, Siaya, Homabay and Migori
- The 4-dose schedule recommended was at 6 months, 7 months, 9 months, and 24 months of age
- The overall malaria vaccine coverage in Kenya is relatively high for the first few doses of the RTS,S/AS01 vaccine, with studies showing coverage around 78% for the first dose, but significantly dropping for subsequent doses, with only around 24% receiving the full four-dose regimen.

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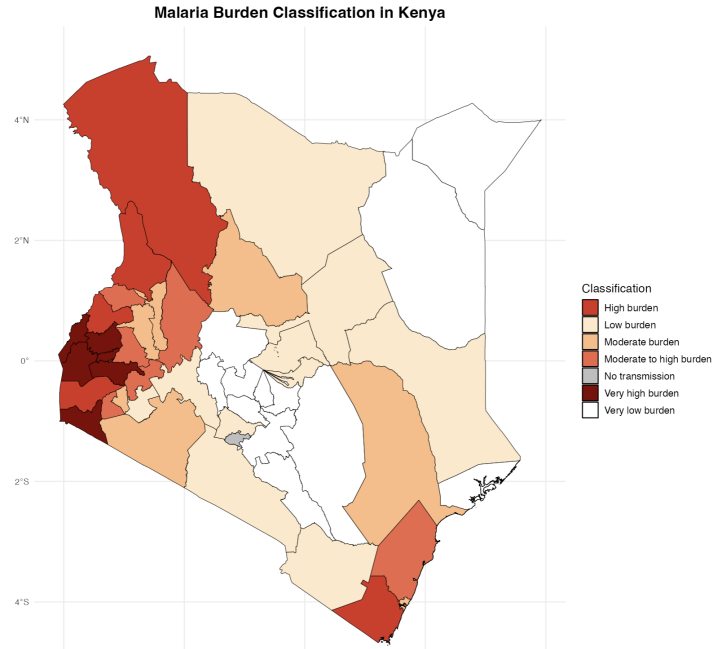
Current Malaria risk Profile

Malaria Burden Classification in Kenya

Map Legend

This map shows the malaria burden classification across Kenyan counties.

- No transmission: -
- Very low burden: 2.0 (1.0–3.2)
- Low burden: 11.0 (9.0–15.5)
- Moderate burden: 54.0 (30.5–71.0)
- Moderate to high burden: 95.0 (82.0–117.0)
- High burden: Dark 474.0 (343.0–478.0)
- Very high burden: 748.0 (649.0–850.0)



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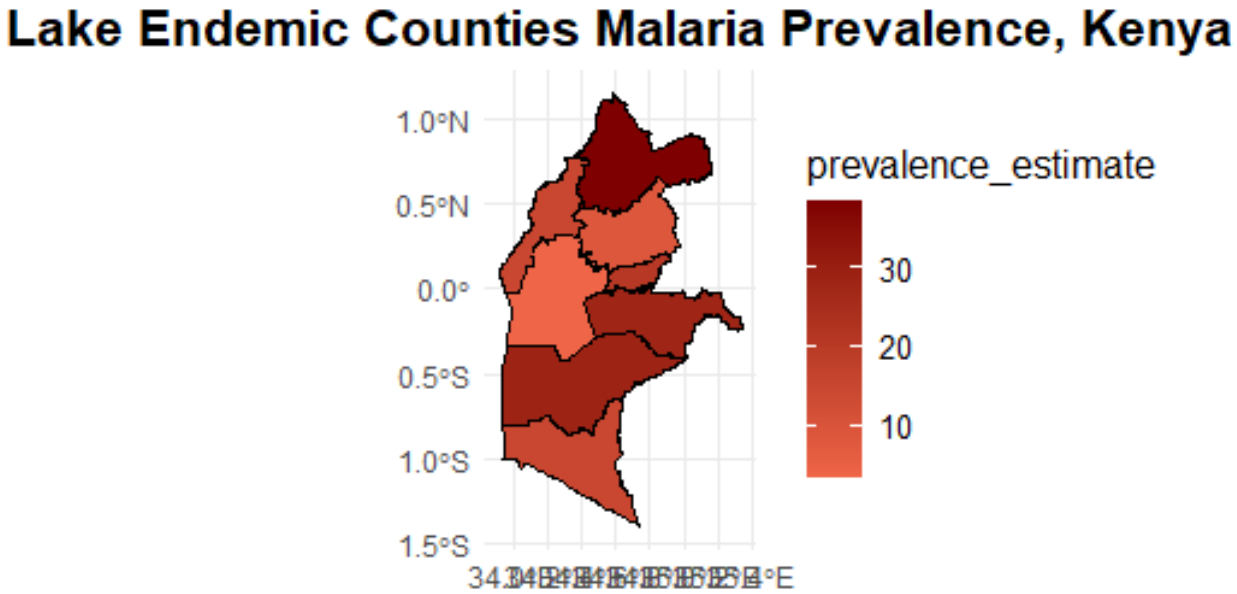
Malaria Prevalence for vaccine implementing counties



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Hackaton Challenge

- **Vaccine coverage challenges:** While vaccine coverage has improved, over 30% of children have yet to complete the full four-dose regimen.

Rationale

- To evaluate the impact of increasing dose 4 coverage

Objective

- To quantify additional cases averted if dose 4 coverage was increased to dose 3 coverage

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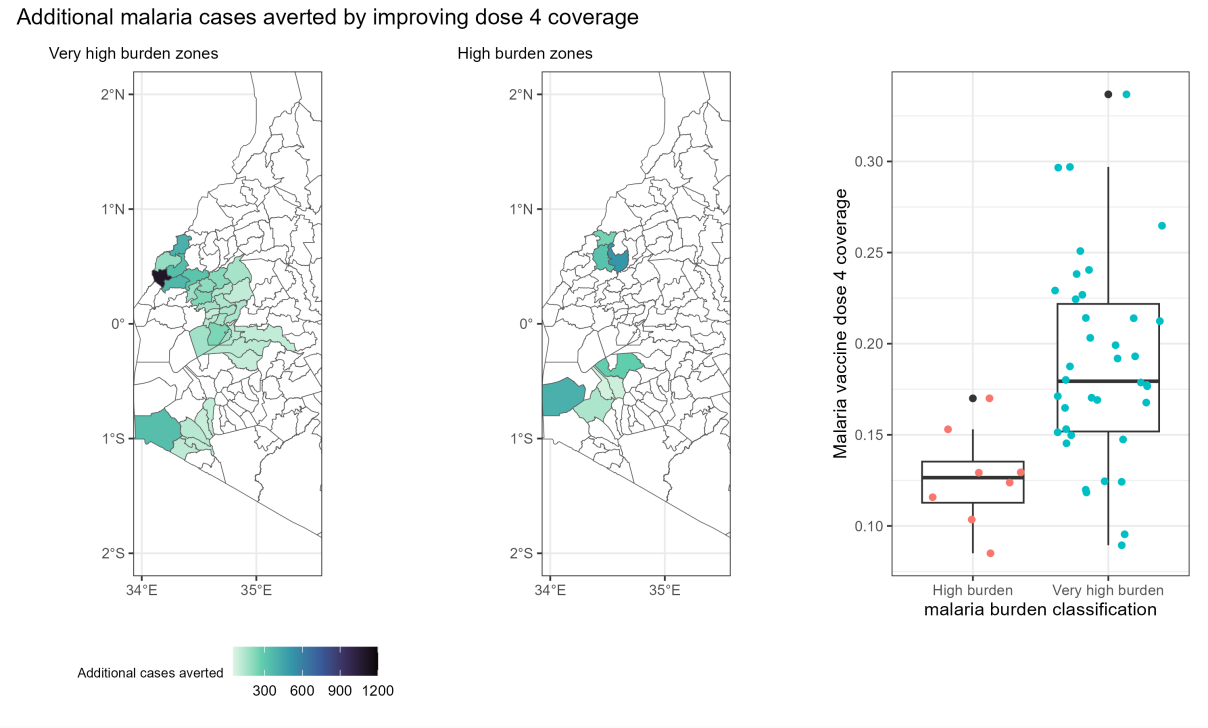
Technical workplan overview

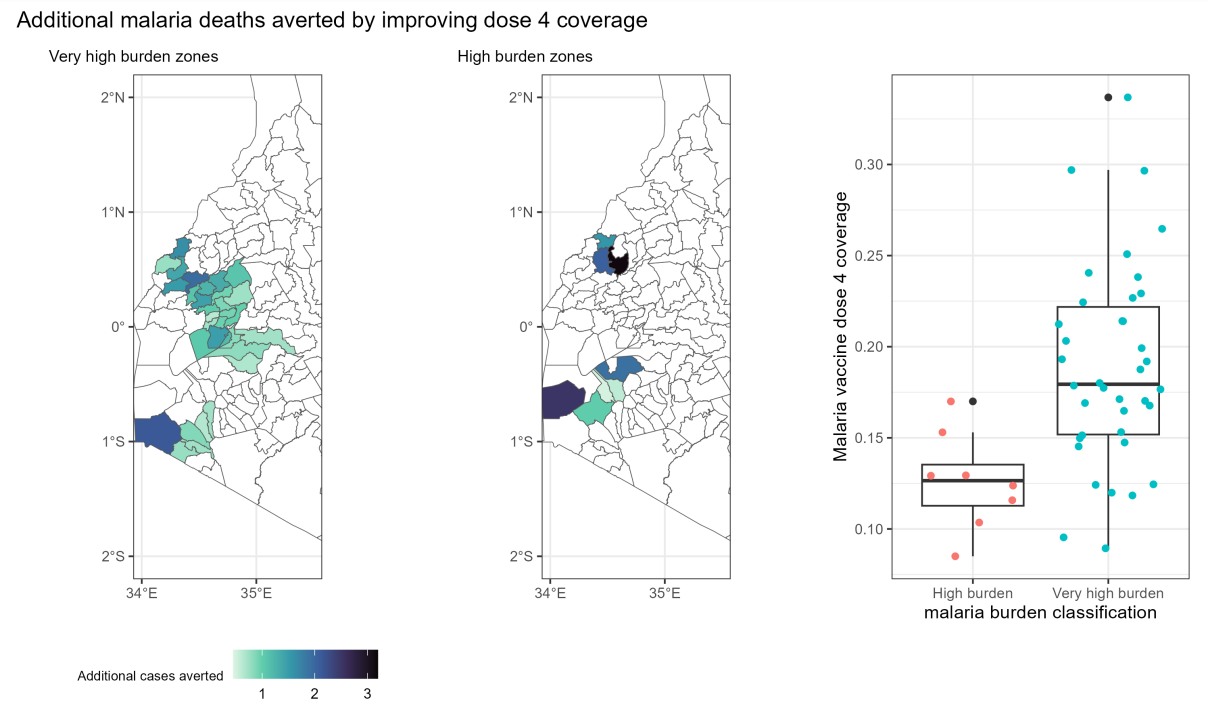
- Collate routine data on the number of children of vaccine age and vaccine coverage of dose-3 and dose-4
- Estimate prevalence at the subcounty level
- Link subcounties to previously modelled estimates of RTS,S impact by prevalence
- Estimate subcounty level impact of increasing dose-4 coverage to dose-3 levels
- Map and visualize results,linking to dashboard

Results

Cases Averted by Dose-4



Death Cases averted by dose-4



Next steps

- Develop a policy paper
- Explore more scenarios by looking at a different vaccine and cost-effective analysis
- Refine and improve the current by the person taking forward the project by Tabitha and Githinji Geoffrey

ASANTE SANA