

Concept note

**Scaling-up malaria vaccination: an estimation of widespread implementation costs**

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**Summary**

*As the global health community prepares for the roll-out and expansion of an effective malaria vaccine, public health authorities will need to ready the funding and logistical mechanisms to make the delivery and administration of the vaccine feasible and efficient. This “concept note” describes a proposed meta-analysis of the existing literature on the implementation costs of vaccination programs in developing countries, with the aim of estimating country-specific malaria vaccine administration costs.*

## Overview

We propose to estimate the cost of implementation of widespread vaccination against malaria. We will generate estimates both globally and at the country-level, thereby informing and preparing the public health and scientific communities for the roll-out of widespread malaria vaccination, a potential key component in the global push towards eradication.

## Process

We propose a research project divided into three phases:

1. A literature review phase, aimed at identifying, describing and synthesizing all existing knowledge pertaining to the cost of implementing<sup>1</sup> vaccination programs in malaria-endemic regions.
2. An analysis phase, in which the studies retrieved in the literature review are quantified in a standardized fashion, and compared at the country-level. The analysis phase will also consist of the generation of a statistical model to estimate the main determinants/predictors of implementation costs for the existing literature through the use of meta-analysis and regression techniques.
3. An extrapolation and dissemination phase, consisting of the estimation (for all malaria-endemic countries) of implementation costs per vaccine administered.

## Costs

Phase 1 of this project can be carried out with minimal or no funding. Phases 2 and 3 will require funding:

- Phase 2 will require funding for researcher time and statistical consulting (70% of total project cost)
- Phase 3 will require funding for researcher time, production of visualizations, and server/hosting for public-facing toolkit (20% of total project cost)

Additionally, approximately 10% of project cost should be allotted for writing.

## Impact

A literature review and accompanying meta-analysis of implementation costs will be impactful in both the scientific and public health communities. From a scientific point-of-view, this study will develop and detail a methodology for the standardization of complex costing data across time, and space, accounting for the intricacies of each vaccine campaign, and synthesizing knowledge so as to be relevant to future malaria vaccination campaigns. From a public health perspective, this study's results will help public health agencies prepare for the financial aspects of malaria elimination and eradication campaigns, as well as identify areas of high cost (so as to begin addressing those *prior* to campaign implementation).

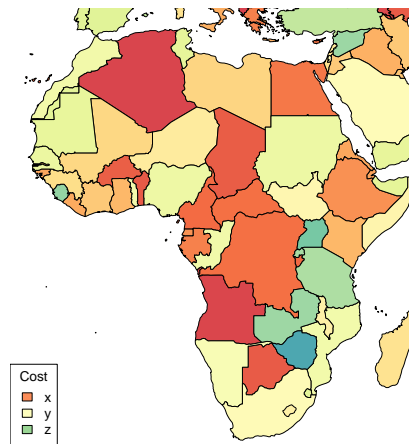
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<sup>1</sup>For the purposes of this project, "implementation" refers to all costs other than the purchase of the vaccine itself: procurement, transportation, storage, administration, loss, disposal, documentation, etc.

## Knowledge products

This project will produce not only a literature review and meta-analysis suitable for publication, but also a public-facing toolkit<sup>2</sup> with visualizations and tools for use by public health authorities, such as country-specific cost estimates (below map) and costs attributable to different areas (below table).

Example knowledge product 1: country-specific implementation cost estimates



Example knowledge product 2: Breakdown of cost estimates by expenditure area

	Country	Transporation	Storage	Loss	Disposal	Documentation	Administration
1	Uganda	1.14	0.14	0.11	0.34	0.15	1.41
2	Kenya	0.86	0.19	0.31	0.32	0.26	0.98
3	Mozambique	3.51	0.19	0.24	0.32	0.88	1.61

<sup>2</sup>Similar in form to <https://joebrew.shinyapps.io/ilied/>