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Impact of the innovative 1,7- malaria reactive community-based testing and response (1,7-mRCTR) strategy

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Background

- WHO T-3 (Test-Treat-Track) initiative for malaria surveillance.

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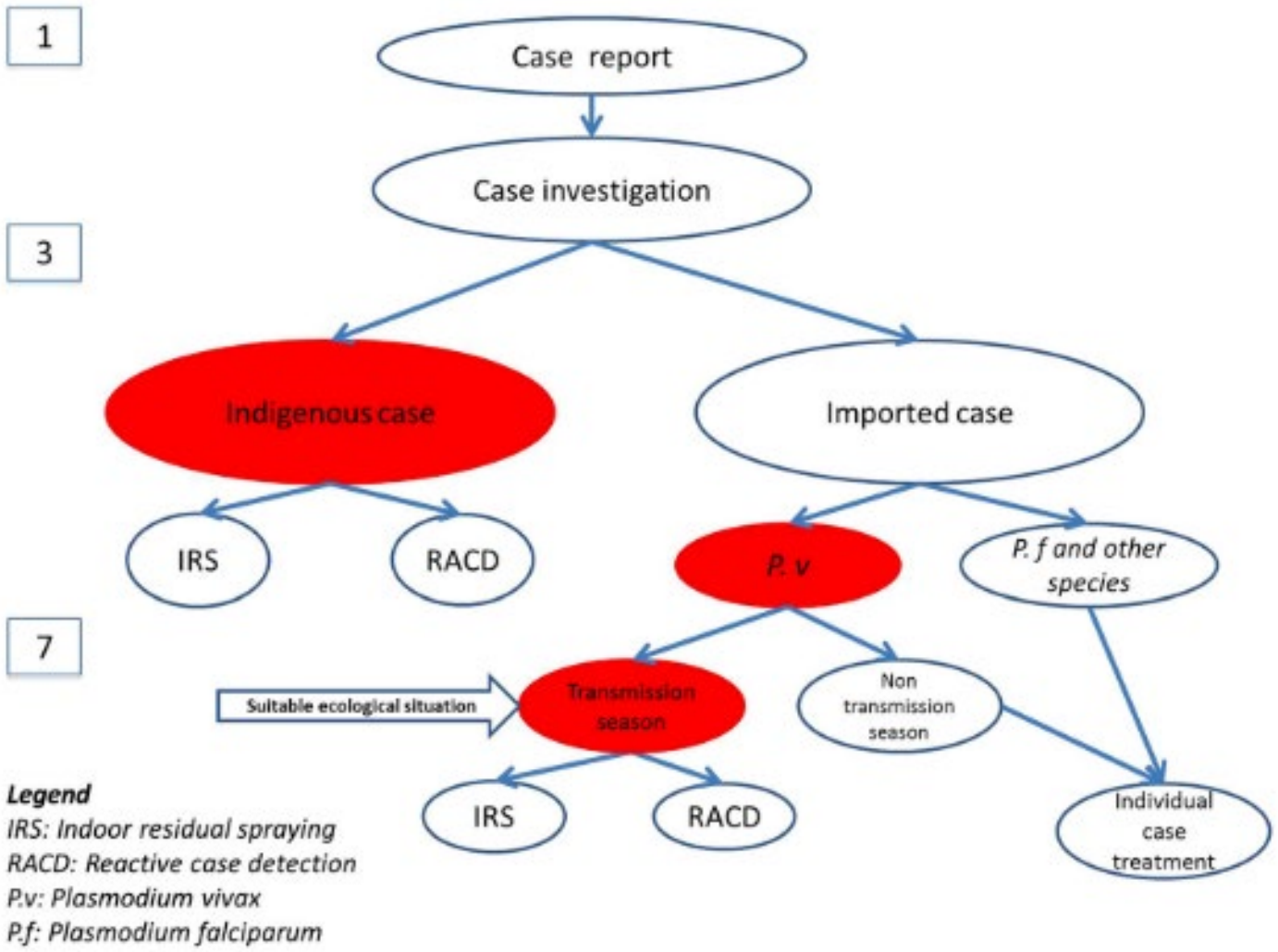
- China has made remarkable efforts in eliminating malaria with Its 1-3-7 model strategy in their low transmission setting (Sen et al., 2015)



Zhou et al, 2015

Background

- WHO T-3 (Test-Treat-Track) initiative for malaria surveillance
- China has made remarkable efforts in eliminating malaria with Its 1-3-7 model strategy in their low transmission setting (Sen et al., 2015).
- Tanzania explored the effectiveness and applicability of this Chinese model and incorporated 1,7 mRCTR Funded by BMGF (Mlacha et al., 2020).

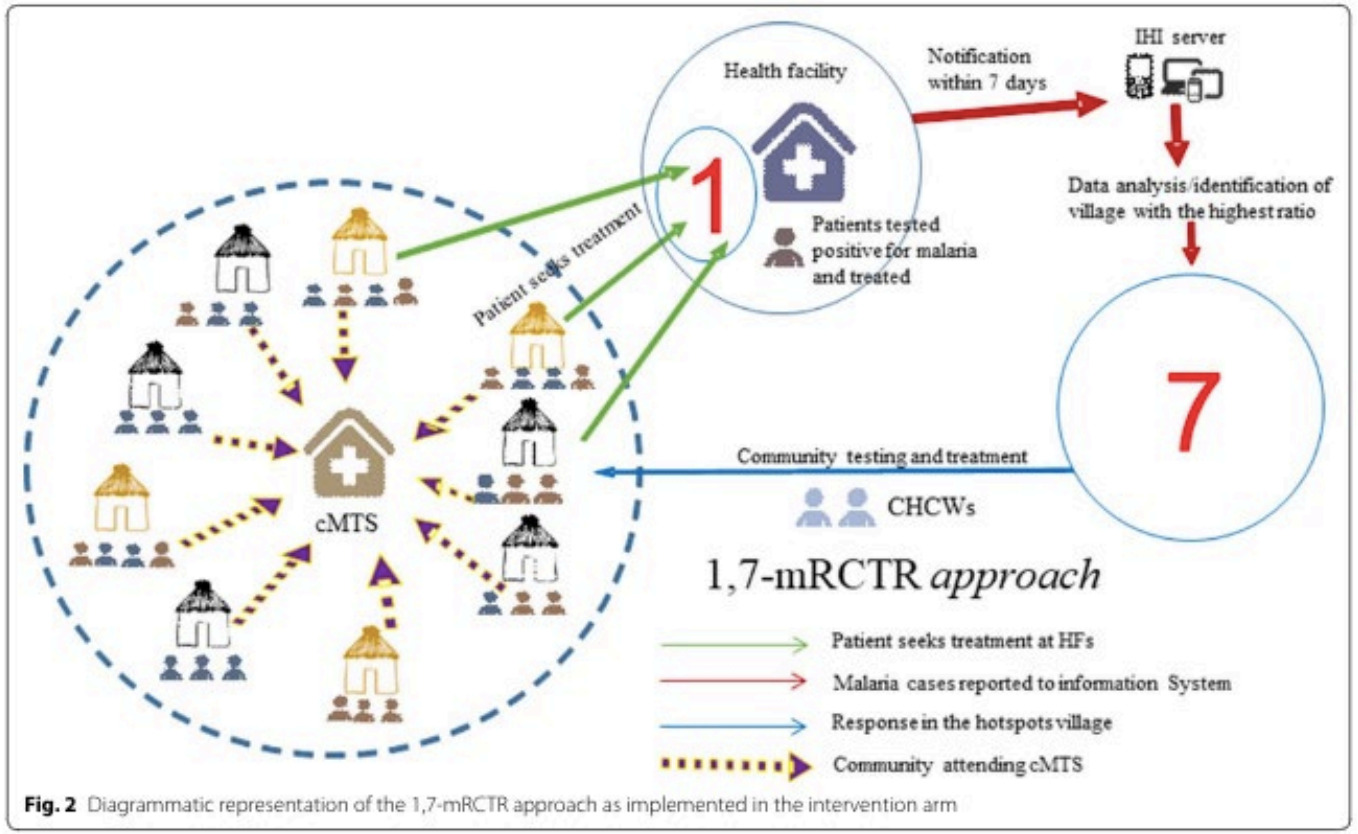
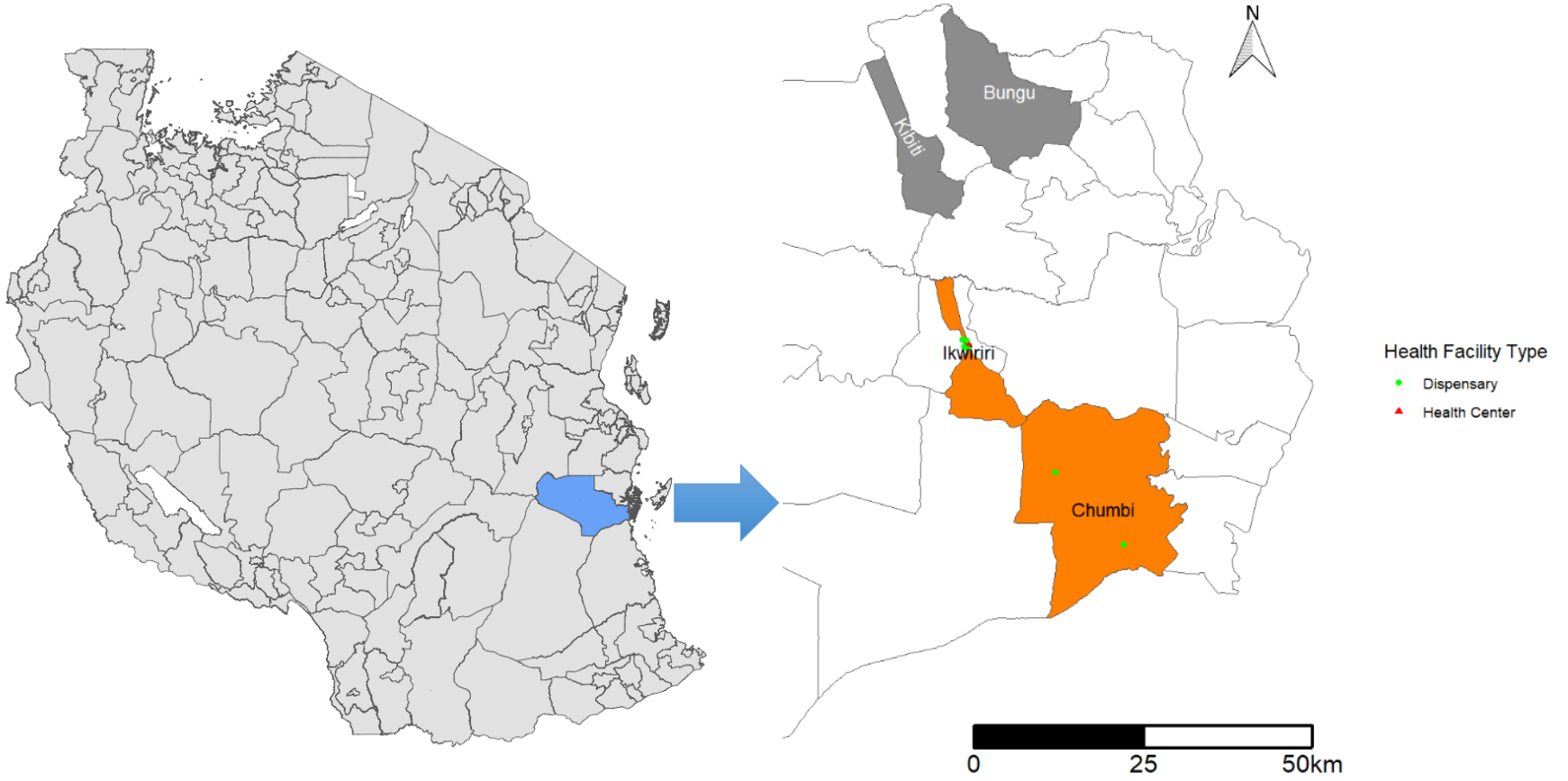


Fig. 2 Diagrammatic representation of the 1,7-mRCTR approach as implemented in the intervention arm

Mlacha et al., 2020

Background cont…

- Pilot study in Rufiji from September 2016 – June 2018



Background cont…

- Pilot study in Rufiji from September 2016 – June 2018
- The effectiveness of the 1,7 mRCTR has been proved statistically by a reduction of malaria prevalence by 81% in this pilot

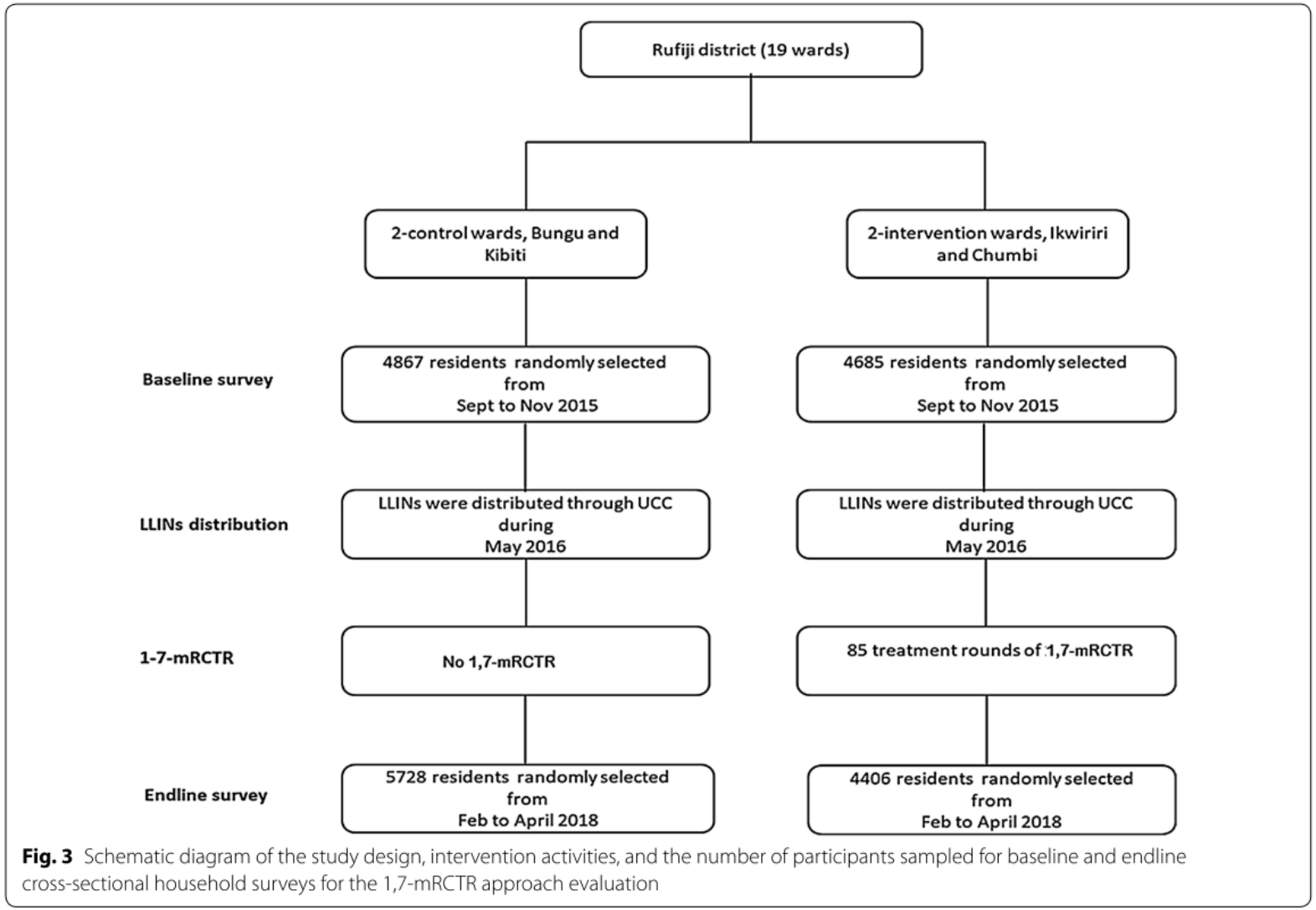


Fig. 3 Schematic diagram of the study design, intervention activities, and the number of participants sampled for baseline and endline cross-sectional household surveys for the 1,7-mRCTR approach evaluation

Mlacha et al., 2020

Impact of 1,7-mRCTR

Interrupted time series analysis (ITSA)

- The segmented regression analysis is a statistical modelling that helps us draw more formal conclusions about the impact of this strategy whether the change was due to the strategy or other factors.

Why ITSA?

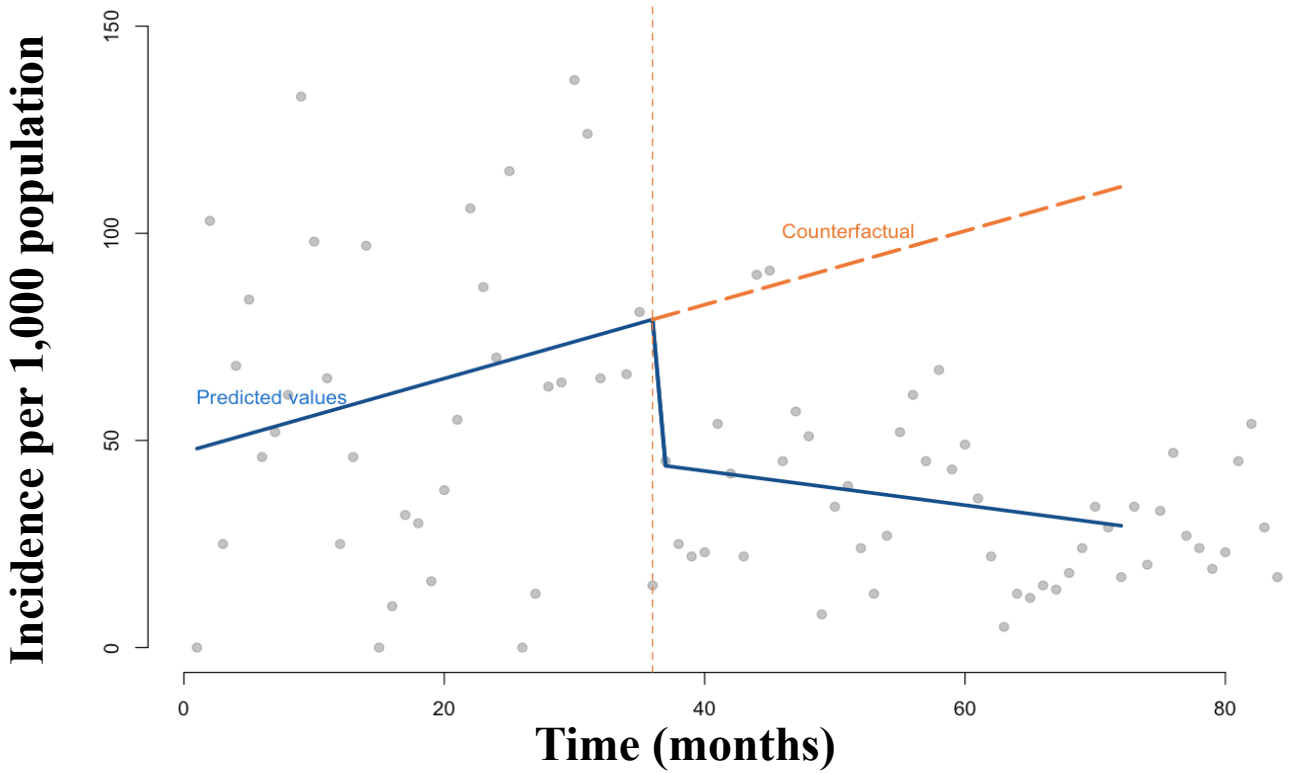
- Allows to control for prior trends in the outcome and to study the dynamics of change of the strategy.
- Checks for immediate and sustained effects of the strategy.

$$Y = b_0 + b_1 T + b_2 \boldsymbol{D} + b_3 \boldsymbol{P} + \text{e}$$

  - Where; **D** assesses the immediate effect of the strategy and
    P assesses the sustained effect of the strategy

Impact of 1,7-mRCTR cont…

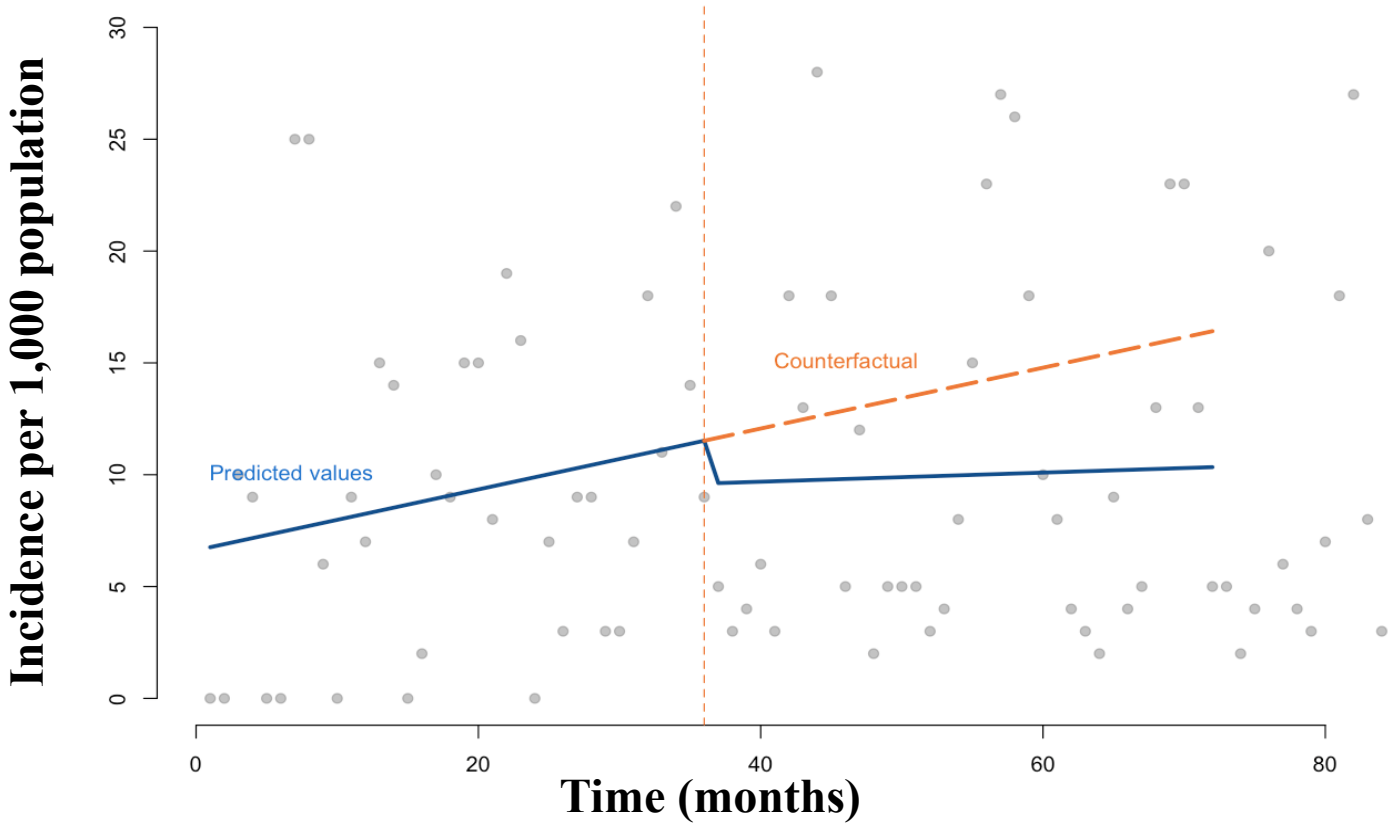
- Interrupted time series analysis using routine data from DHIS2
- From year 2013 to 2019
- Ward with moderate transmission



WARD	Estimates	P-value
Intervention ward 1		
➢ Time	0.8903	0.0898
➢ Treatment	-34.9085	0.0160 *
➢ Timespace	-1.3033	0.0381 *

Impact of 1,7-mRCTR cont…

- Interrupted time series analysis using routine data from DHIS2
- From year 2013 to 2019
- Ward with high transmission



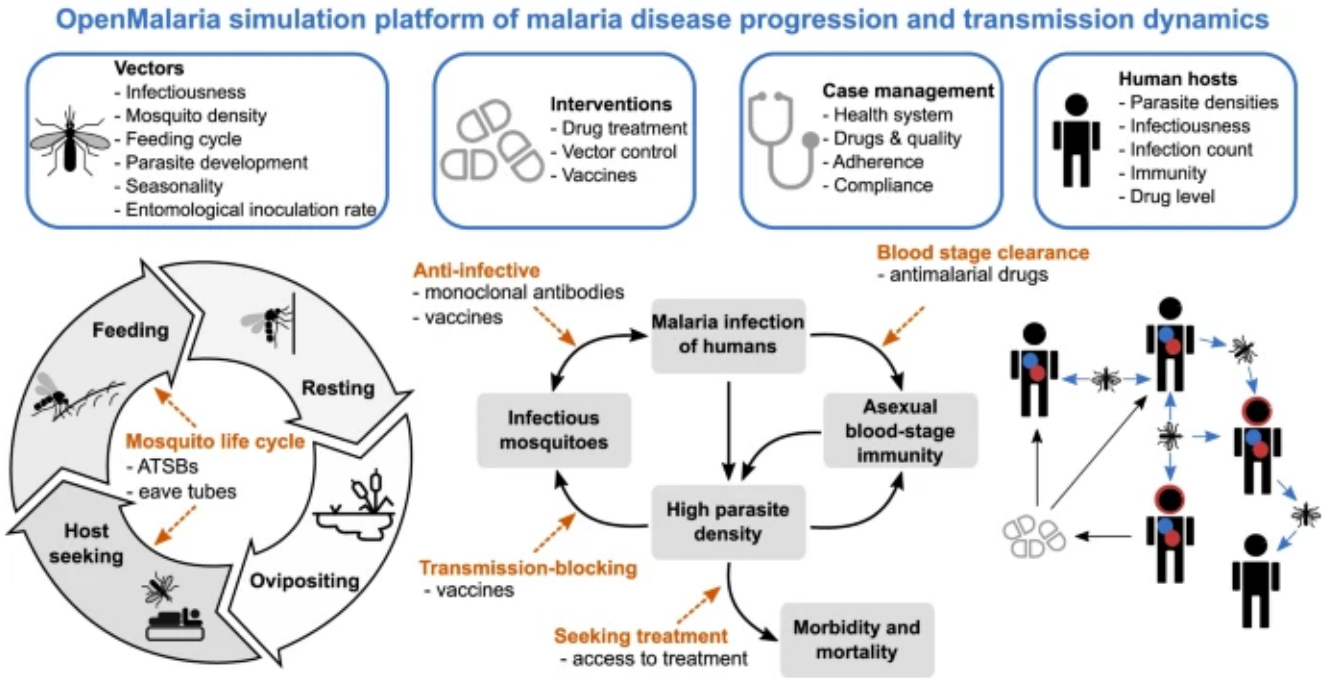
WARD	ESTIMATES	P-VALUE
Intervention ward 2		
➢ Time	0.1360	0.2758
➢ Treatment	-1.9140	0.5741
➢ Timespace	-0.1157	0.4362

Causal Impact

Wards	Actual	Predicted [95%CI]	Relative effect [95%CI]	P-value
Moderate trans.				
Average	0.62	0.89 [0.65, 1.1]	-31% [-55%, -4.1%]	
Cummulative	28.36	41.16 [30.03,51.2]	-31% [-55%, -4.1%]	**0.01104***
High trans.				
Average	0.16	0.19 [0.14, 0.24]	-13% [-39% , 13%]	
Cummulative	7.50	8.59 [6.38, 10.87]	-13% [-39% , 13%]	0.1636

Way Forward

- Scaling up 1,7-mRCTR approach to maximize its impact will require proper planning.
- We are proposing to adapt openMalaria to predict scenarios for successful implementation



What OpenMalaria will help us answer

1. How many rounds is required to implement 1,7-mRCTR approach based on different baseline malaria prevalence?
2. What are the different coverages (% of the population) for 1,7-mRCTR approach implementation required to reduce malaria to total elimination? If elimination is not achieved, how much is clinical incidence reduced?
3. What are the best optimal malaria interventions to supplement with 1,7-mRCTR approach that can be used to reduce malaria transmission? (using OpenMalaria or **VCOM**)

Thank you

Acknowledgement

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