

# Modelling malaria routine surveillance data to inform seasonal malaria chemoprevention strategy in Moïssala, Southern Chad

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## Background

Seasonal Malaria Chemoprevention (SMC) has been implemented by MSF in collaboration with the national and local health authorities in the district of Moïssala, southern Chad to prevent malaria in young children during the high transmission season. The intervention started in 2013, with an interruption during the year 2019, and was expanded to include a fifth round since 2021. In response to updated WHO guidelines in 2022, which allow countries to tailor SMC strategies to local conditions, MSF sought to identify the most effective SMC timing and frequency in Moïssala using mathematical modelling.

## Methods

A climate-informed malaria transmission model was developed using routine surveillance and household survey data from 2018–2023. This model simulated four SMC strategies: four or five rounds starting in either June or July. Bayesian inference techniques were used to calibrate the model and estimate the impact of each strategy.

## Results

Results indicated that had SMC been delivered in 2019, approximately 11,200 (credible interval: 7720 - 14800) malaria cases in children under five could have been averted—a 19% reduction. Adding a fifth round of SMC since led to an average 6% further decrease in cases, corresponding to about 2,660 (1880-3550) fewer cases each year. Starting the first round in June instead of July reduced cases by an additional 580 (145-1140) in 2023. Overall, the optimal approach was five rounds starting in June, averting an estimated 2,570 more cases annually compared to the original strategy of four rounds starting in July.

## Conclusion

The analysis supports the adoption of five SMC rounds starting in June to maximize impact. However, this recommendation may need to be adjusted in the future in response to shifts in rainfall patterns and climate change.

An optimal strategy for seasonal malaria chemoprevention in Southern Chad was identified using a mathematical model informed by routine surveillance and climate.