Poster: 1059

# Impact of seasonal malaria chemoprevention on the prevalence of malaria infection in malaria indicator surveys in Burkina Faso and Nigeria

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## Introduction

Seasonal malaria chemoprevention (SMC) is a safe and effective intervention recommended by the World Health Organization for the prevention of malaria in children 3–59 months in the Sahel region.[1,2] Clinical trials have shown SMC prevents around 75 percent of clinical malaria episodes.[3] The impact under routine programmatic conditions has been assessed during research studies but there is a need to identify sustainable methods to monitor impact using routinely collected data. Data from demographic health surveys (DHS)/malaria indicator surveys (MIS) are of high quality, yet have been overlooked in the context of measuring SMC impact.

## Methods

- Malaria infection prevalence data collected by DHS/MIS programmes in Burkina Faso (2010, 2014, 2017) and Nigeria (2010, 2015, 2018) were merged with SMC programme, rainfall, and geographic data to assess the impact of SMC.
- We conducted a mixed-effects logistic regression model with random intercepts for district/local government areas (LGAs) to predict the presence of malaria infection in children 6–59 months, using rapid diagnostic tests (RDTs) and microscopy, separately.
- Data collected are based on forest plots showing the odds ratio (OR) and confidence intervals (CI) for associations between SMC administration and malaria infection as diagnosed by RDT or microscopy by country, adjusted for year, age, sex, use of a net the night before data collection, wealth quintile, urbanicity, rain, month and treatment-seeking behaviour with random intercepts for district/LGA.

## Results

- After covariate adjustment, there is a substantial decrease in odds of RDT-positive malaria infection in children living in areas where SMC was implemented in Burkina Faso during the months when SMC is given (OR: 0.28, 95% CI 0.21–0.37, p<0.001).
- This protective effect persists up to two months post-SMC administration (one month post SMC: OR: 0.29, 95% CI 0.12–0.72; two months post SMC: OR: 0.33. 95% CI 0.17–0.64).
- Similar results were found in Nigeria (OR: 0.40, 95% CI 0.30–0.55, p<0.001).
- In both countries, the effect size was smaller for microscopy-confirmed malaria infection.

## Conclusion

The impact of SMC can be measured in the prevalence of malaria infection from MIS when SMC programme data are also available from the same time period. These surveys provide representative and standardised data previously overlooked for SMC impact. Surveys could be integrated into impact evaluations together with a variety of other routine data, such as clinical case numbers, hospitalisations and deaths. Additionally, when household surveys of infection prevalence in under-fives are used to inform country malaria burden estimates across age groups, the ongoing SMC impact should be taken into account.

## References

1. World Health Organization. WHO policy recomm endation: Seasonal malaria chemoprevention (SMC) for *Plasmodium falciparum* malaria control in highly seasonal transmission areas of the Sahel sub-region in Africa. WHO Global Malaria Programme. Geneva: WHO; 2012.
2. ACCESS-SMC Partnership. Effectiveness of seasonal malaria chemoprevention at scale in west and central Africa: An observational study. The Lancet. 2020; 396(10265): 1829–40.
3. Meremikwu MM, Donegan S, Sinclair D, Esu E, Oringanje C. Intermittent preventive treatment for malaria in children living in areas with seasonal transmission. Cochrane Database of Systematic Reviews, 2012; (2) : CD003756.

# The impact of SMC can be seen in malaria infection prevalence data collected through regular household surveys

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## Supplementary visuals

**Figure 1: Results of an adjusted random-effects generalised linear model for associations between SMC and odds of malaria infection determined by RDT and microscopy in Burkina Faso**

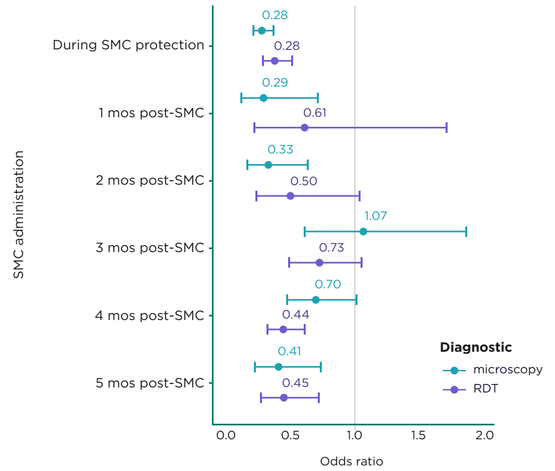
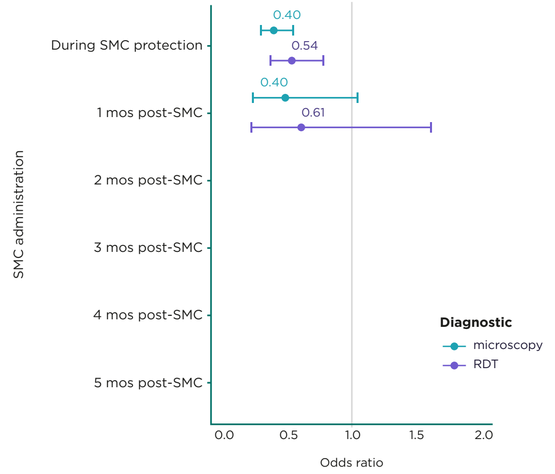



**Figure 2: Results of an adjusted random-effects generalised linear model for associations between SMC and odds of malaria infection determined by RDT and microscopy in Nigeria**




## Acknowledgements

This study is funded through philanthropic donations received as a result of being awarded Top Charity status by GiveWell, a nonprofit organisation dedicated to finding outstanding giving opportunities. We would further like to acknowledge contributions from Imperial College, London; the Demographic and Health Surveys Program; Burkina Faso Mapping Institute; Database of Global Administrative Areas (GADM); and the Climate Hazards Group InfraRed Precipitation with Station database (CHIRPS).