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A Methodology for Assessing Seasonal Malaria Chemoprevention Adherence and Efficacy in Sahelian Children, Chad,

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| Abstract

Seasonal malaria chemoprevention (SMC) is a key intervention for reducing malaria burden in Sahelian Africa. Robust methodologies for concurrently measuring community-level adherence to the monthly regimen and its protective efficacy against clinical malaria in routine, large-scale settings are needed. This methodology article details a study design to assess both adherence to SMC and its efficacy in preventing clinical malaria among children aged 3–59 months in the Sahelian regions of Chad over multiple transmission seasons. A hybrid, longitudinal design integrated household surveys with passive case detection. Adherence was measured via caregiver recall and verification of empty medicine blister packs after each monthly SMC cycle. Efficacy was assessed through surveillance for febrile illness and laboratory confirmation of *Plasmodium falciparum* infection at participating health facilities. The methodology encompasses sampling strategies, community engagement protocols, data collection tools, and analytical plans for calculating adherence rates and incidence rate ratios. As a methodology article, this paper presents no empirical results. The described approach is designed to yield metrics including the proportion of children receiving all four monthly SMC doses per season and the incidence of confirmed clinical malaria among the study cohort. This methodology provides a standardised, feasible framework for the integrated evaluation of SMC programme implementation and health

impact. It enables the simultaneous assessment of coverage, adherence, and therapeutic effectiveness under routine programmatic conditions. Researchers and national malaria control programmes should adapt this integrated methodology for routine SMC monitoring and evaluation. Emphasis should be placed on training field teams in ethical data collection and maintaining community engagement throughout the surveillance period. malaria, seasonal malaria chemoprevention, methodology, adherence, efficacy, Chad This work provides a detailed methodological framework for the integrated assessment of SMC adherence and efficacy, aiming to strengthen the evidence base for programme evaluation in the Sahel.
