

# Harnessing the seasonal malaria chemoprevention campaign in Nigeria: Safety, equity and cost of fully integrating vitamin A supplementation

Olusola Oresanya,<sup>1</sup> Abimbola Phillips,<sup>1</sup> Ebenezer Ihechukwu,<sup>1</sup> Olabisi Ogunmola,<sup>1</sup> Taiwo Ibinaiye,<sup>1</sup> Kabir Muhammad,<sup>1</sup> Emmanuel Shekarau,<sup>2</sup> Jesujuwonlo Fadipe,<sup>1</sup> Umar B. Abubakar,<sup>3</sup> Nneka Onwu,<sup>4</sup> Helen Counihan<sup>5</sup> and Jane Achan<sup>6</sup>

<sup>1</sup> Malaria Consortium, Nigeria  
<sup>2</sup> National Malaria Elimination Programme, Nigeria  
<sup>3</sup> Malaria Elimination Programme, Bauchi Nigeria  
<sup>4</sup> National Primary Health Care Development Agency, Nigeria  
<sup>5</sup> Malaria Consortium, United Kingdom  
<sup>6</sup> Malaria Consortium, Uganda

## Introduction

Given the scale-up of seasonal malaria chemoprevention (SMC) in Nigeria from 40,000 children in 2013 to over 22 million in 2022, and its expansion from the Sahel region to new geographies, this community-based platform could support the delivery of additional life-saving interventions, including vitamin A supplementation (VAS). Malaria Consortium carried out research in 2019 on the feasibility and acceptability of co-implementing VAS with SMC in Sokoto state, Nigeria.<sup>[1]</sup> In 2021, we conducted a follow-up study in Bauchi state on the safety, equity, feasibility and cost of integration in rural and urban settings, targeting 165,000 children under five.

## Methods

- We conducted cross-sectional surveys at baseline (cycle 3, SMC only) and endline (cycle 4, integrated SMC+VAS campaign) with 540 children 6–59 months, assessing coverage, adverse drug reactions (ADR) and demographics.<sup>[2]</sup>
- We carried out a programmatic cost analysis using the ingredient method, comparing the cost of SMC delivery at baseline and the integrated campaign cost.
- The feasibility and acceptability assessment of the integrated campaign is reported in another poster highlighting barriers and facilitators of integration.

## Results

- There was no significant difference between children who did or did not receive SMC and VAS at endline, except for children in urban areas, who had lower odds of receiving either SMC or VAS compared to rural areas (SMC: OR=0.21 [95% CI: 0.10–0.41]; VAS: OR=0.58 [95% CI: 0.37–0.92]) (Table 1).
- ADRs were higher at baseline compared to endline (Table 2); reaction types reported — vomiting, skin rash, loss of appetite, fever and diarrhoea — were consistent between baseline and endline.
- Intervention costs were \$0.94 per child for SMC only and \$1.18 per child for SMC and VAS. The main cost drivers for both campaigns included SMC drugs, labour, training, meetings, supervision, vitamin A, demand creation, opportunity costs and distribution costs (Table 3).

## Conclusion

This study demonstrates the viability of the SMC platform to deliver VAS safely and equitably, at a modest additional cost of \$0.24 per child. It also highlights the need to explore factors responsible for the limited reach of children in urban areas using the current delivery approach.

## References

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- Oresanya O, Phillips A, Ihechukwu J, Shekarau E, Onwu N, Counihan H, Achan J. Improving vitamin A coverage through integration with seasonal malaria chemoprevention in Nigeria [poster presentation]. 70th American Society of Tropical Medicine and Hygiene Annual Meeting. 17–21 Nov 2021. Available from: www.malariaconsortium.org/resources/publications/1501/improving-vitamin-a-coverage-through-integration-with-seasonal-malaria-chemoprevention-in-nigeria

# Integrating VAS with SMC is safe, feasible, acceptable to communities and implementers, and can be achieved at minimal additional cost



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## Supplementary visuals

Table 1: Proportion of children who received and did not receive SMC and VAS at endline (equity)

Characteristics	No	Yes	p-value	No	Yes	p-value
	n (%)	n (%)		n (%)	n (%)	
<b>Child's age</b>						
6–11 months	11 (11.6)	40 (9)	0.624	8 (14.0)	43 (8.9)	0.211
6–11 months	84 (88.4)	402 (91)		49 (86.0)	439 (91.1)	
<b>Child's sex</b>						
Female	55 (57.9)	189 (42.8)	0.064	30 (52.6)	215 (44.6)	0.149
Male	40 (42.1)	253 (57.2)		27 (47.4)	267 (55.4)	
<b>Household religion</b>						
Christianity	3 (3.2)	4 (0.9)	0.126	3 (5.3)	4 (0.8)	0.19
Islam	92 (96.8)	438 (99.1)		54 (94.7)	478 (99.2)	
<b>Wealth index</b>						
Lowest	39 (40.2)	158 (35.7)	0.838	27 (47.4)	170 (35.3)	0.683
Middle	30 (30.9)	145 (32.8)		16 (28.1)	159 (33.0)	
Upper	28 (28.9)	139 (31.4)		14 (24.6)	153 (31.7)	
<b>Locality</b>						
Urban	58 (61.1)	211 (47.7)	0.023	46 (80.7)	225 (46.7)	<0.0001
Rural	37 (38.9)	231 (52.3)		257 (53.3)		
<b>Caregiver's highest level education attended</b>						
No formal education	78 (82.1)	344 (78.0)	0.474	45 (79.0)	215 (44.6)	0.683
Pre-primary	0 (0)	1 (0.2)		0 (0)	267 (55.4)	
Primary	5 (5.26)	45 (10.4)		6 (10.5)	170 (35.3)	
Secondary	7 (7.37)	40 (9.0)		2 (3.5)	159 (33.0)	
Higher	5 (5.26)	11 (2.5)		4 (7.02)	153 (31.7)	

Table 2: Proportion of ADRs reported by caregivers at endline for SMC and VAS (safety)

Reported ADR	Baseline (SMC only)	Endline (VAS+SMC)	p-value
	n (%)	n (%)	
No	458 (92.0)	426 (98.4)	>0.0001
Yes	40 (8.0)	7 (1.6)	

Table 3: Intervention costs at baseline and endline

	SMC without VAS (baseline)	SMC with VAS (Endline)
	n (%)	n (%)
Average cost per child fully covered	\$0.94 (₦385.6) (Excludes design and start up cost)	\$ 1.18 (₦483.71) (Excludes design and start up cost)
Additional cost of integration per child	\$0.24 (₦98.11)	

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