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Adaptation of rapid multi-objective LQAS surveys in Burkina Faso, Chad, Nigeria, Mozambique and Togo to drive improvements in SMC delivery

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Introduction

Malaria Consortium supports the delivery of seasonal malaria chemoprevention (SMC) to children 3–59 months during the rainy season in countries where transmission is highly seasonal. This involves four monthly doses of sulfadoxine-pyrimethamine plus amodiaquine (SPAQ) and has been shown to provide effective protection against clinical *Plasmodium falciparum* malaria cases.[1] We adapted the lot quality assurance sampling (LQAS) method for end-of-cycle SMC monitoring surveys in Burkina Faso, Chad, Nigeria, Togo and Mozambique to measure quality of delivery across 16 indicators (Table 1). Surveys took place after cycles 1–3 in 2020 and 2021 to facilitate local assessment of programme performance at the supervision area (SA) level using hypothesis tests to determine whether indicator standards had been met. We aimed to promote rapid use of data from monitoring surveys to drive ongoing improvements in SMC delivery within a given SMC round.

Methods

- LQAS was used to identify lots (SAs) where quality performance levels of SMC delivery had not been met (Figure 1).
- Districts were divided into SAs based on health facility catchments. Lots of 25 households were sampled. Targets and decision values were defined for each indicator (Table 1). When numbers of households fell below relevant decision value for each indicator, a quality performance issue was considered to have been identified.
- LQAS surveys were completed within two weeks in cycles 1–3, giving time to process data; identify, prioritise and communicate issues to local stakeholders; and engage them to implement training/delivery improvements in the next SMC cycle.

Results

Programme coverage was high overall, with coverage in some SAs below the 80 percent target. Results contributed to continuous improvement of SMC delivery.

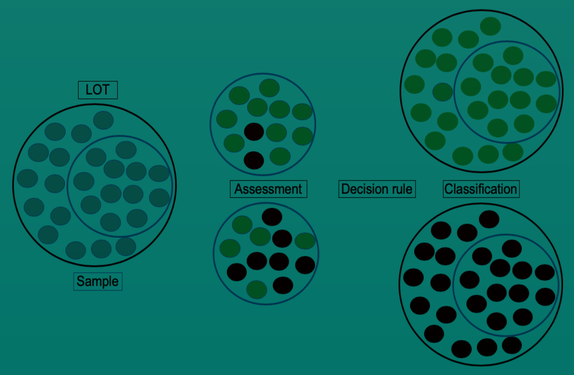
- **Togo**: LQAS was conducted for the first time in Mô district. Coverage of eligible children with SPAQ improved between cycles one and two in 2021. We delivered briefings at health facilities with issues, and took action to improve SMC distributor training and reinforce sensitisation efforts via radio/town criers. The National Malaria Control Program (NMCP) requested LQAS be introduced in other districts with suspected issues (Kozah).
- **Chad**: In cycle three, 2020, overall coverage was 95 percent but the target was not met in 21 of 98 SAs. We supported additional training of SMC distributors in N'Djaména before cycle four.
- **Nigeria**: We held briefings with state health ministries, shared survey findings with health facility managers, and followed-up/ recorded actions to remedy specific issues.
- **Burkina Faso**: We presented findings to the NMCP for dissemination. Results reached stakeholders at least seven days ahead of the next cycle and were presented in preparatory meetings, highlighting guidance relating to issues identified.

Reference

1. 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.

LQAS was successfully used to rapidly improve use of data and facilitate decision-making for programme improvements in SMC-implementing countries

Figure 1: Illustration of LQAS



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Conclusion

Multi-objective LQAS can be successfully implemented in a time-bound SMC campaign to identify delivery issues and guide corrective measures before the next SMC cycle. The approach encouraged collaboration between Malaria Consortium country teams and local stakeholders, and general uptake of survey evidence. All country teams successfully adopted the surveys, allowing for rapid monitoring of performance locally and performance tracking between cycles with sufficient time to effect improvements. Survey completion time decreased compared to previous years, where conventional cluster surveys were used.

Supplementary visuals

Table 1: Table of key SMC indicators assessed using LQAS, 2020–2021

Indicator with targets	Unit of analysis	Denominator	Decision criterion (lower threshhold)	Target (upper threshhold)	α error	β error	Min. lot size	Decision rule (below is failure)	α error	β error	Selected lot size	Decision rule (below is failure)
Households with eligible children visited	Household	Households with eligible children	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
SPAQ administered to eligible child (day 1)	Child	Households with eligible children	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
Eligible child received three-day complete course of SPAQ (inc. day 2 and 3 AQ)	Child	Eligible children reached (day 1 treatment)	75%	95%	0.0755	0.0913	20	18	0.0341	0.0962	25	22
SPAQ administration observed by distributor (day 1)	Child	Eligible children reached (day 1 treatment)	75%	95%	0.0755	0.0913	20	18	0.0341	0.0962	25	22
Card retention	Child	Eligible children reached (day 1 treatment)	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
All SPAQ doses received marked on card	Child	Eligible children reached (day 1 treatment)	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
Caregiver accepted SMC administration (not refused)	Child	Compounds reached (one randomly selected eligible child)	90%	100%	<0.0001	0.0985	22	22	<0.0001	0.0718	25	25
SMC awareness (heard of SMC)	Caregiver	Households with eligible children	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
SMC knowledge (purpose of SMC)	Caregiver	Households with eligible children	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
SMC knowledge (age eligibility for SMC)	Caregiver	Households with eligible children	70%	90%	0.098	0.0905	25	21	0.098	0.0905	25	21
SMC knowledge (importance of age eligibility for SMC)	Caregiver	Households with eligible children	70%	90%	0.098	0.0905	25	21	0.098	0.0905	25	21
SMC knowledge (importance of administering AQ on day 2 and 3)	Caregiver	Households with eligible children	70%	90%	0.098	0.0905	25	21	0.098	0.0905	25	21
SMC knowledge (adverse event)	Caregiver	Households with eligible children	70%	90%	0.098	0.0905	25	21	0.098	0.0905	25	21
Confidence in SMC efficacy	Caregiver	Households with eligible children	75%	95%	0.0755	0.0913	20	18	0.0341	0.0962	25	22
Caregiver reported distributor wore mask	Caregiver	Compounds reached (one randomly selected eligible child)	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23
Information on COVID-19 prevention received	Caregiver	Compounds reached (one randomly selected eligible child)	80%	100%	<0.0001	0.0859	11	11	<0.0001	0.0982	25	23

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. It is also supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria.