

The trajectory of malaria care of children under five years with fever, from an annual (2021-2023) cross-sectional household survey within program areas of the Isdell:Flowers Cross Border Malaria Initiative in Zambia

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Introduction

- Zambia's National Malaria Elimination Strategic Plan 2022-2026 (NMESP) aims to ensure 100% of suspected malaria cases are tested and 100% confirmed cases are treated within 24 hours with an antimalarial.
- Achieving this goal relies on strong health systems and availability of commodities, as well as proper care-seeking behavior within the at-risk population.
- Zambia experienced erratic distribution of rapid diagnostics tests (RDTs) and artemisinin-based combination therapy (ACTs) between 2019-2021 due to bottlenecks in the supply chain, including shipment disruption caused by the COVID-19 pandemic (NMESP 2022-2026).
- There are several steps in the ideal trajectory of care for children under five years (<5) with fever: seek care from a health facility or community health worker (CHW) within 24 hours of fever onset, receive a malaria test, receive treatment if positive for malaria, and take the full course of the medication. Each step in the trajectory of care presents an opportunity for children to be "missed" and, therefore, for possible malaria infections to be left undiagnosed and/or untreated.
- This study aimed to understand the current gaps in this trajectory of care within program areas of the Isdell:Flowers Cross Border Malaria Initiative (IFCBMI) to inform strategic action and advocacy efforts toward the NMESP's case management goals.

Program background

- IFCBMI is an implementing partner of Zambia's National Malaria Elimination Centre (NMEC), operated by the Anglican Diocese of Lusaka with technical and financial support from the J.C. Flowers Foundation.
- IFCBMI works within select communities within Southern and Western Provinces of Zambia, and also within Angola, Namibia, and Zimbabwe (Figure 1).
- In Zambia, IFCBMI supports a network of ~400 CHWs and malaria control agents (MCAs) who deliver community-based malaria testing, treatment, and education, supported by religious/traditional leaders and other influential community members.

Figure 1. IFCBMI program areas



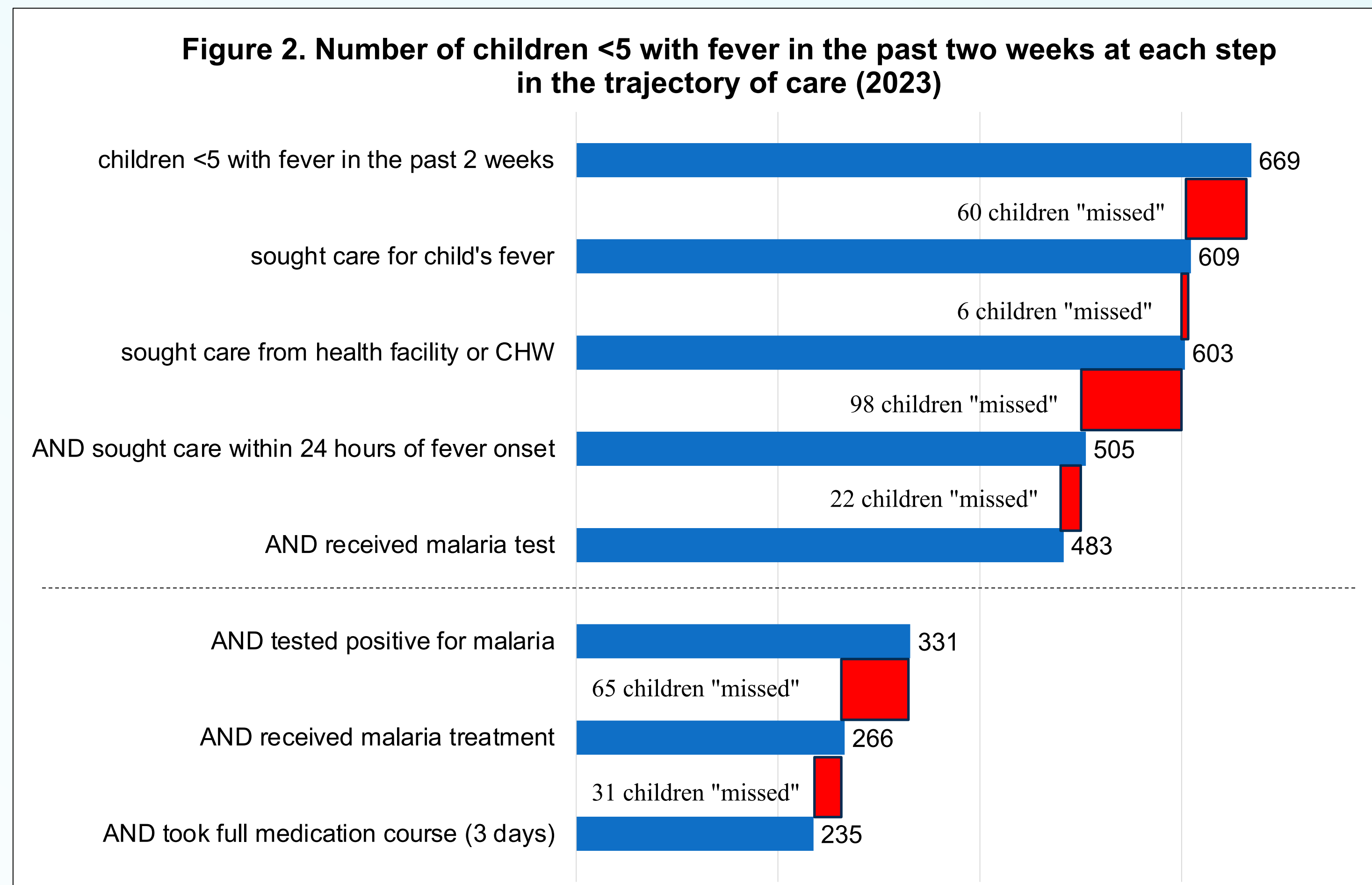
Acknowledgements

We would like to thank the staff, community health workers, and volunteers of the IFCBMI, and the Zambian Ministry of Health's National Malaria Elimination Centre.

Results

Trajectory of care for children <5 with fever (Figure 2)

In 2023, the largest gaps in the trajectory of care were:
 > Seeking care from a health facility or CHW within 24 hours of fever onset
 > Receiving malaria treatment after testing positive for malaria



Care-seeking behavior for children <5 with fever (Figure 3)

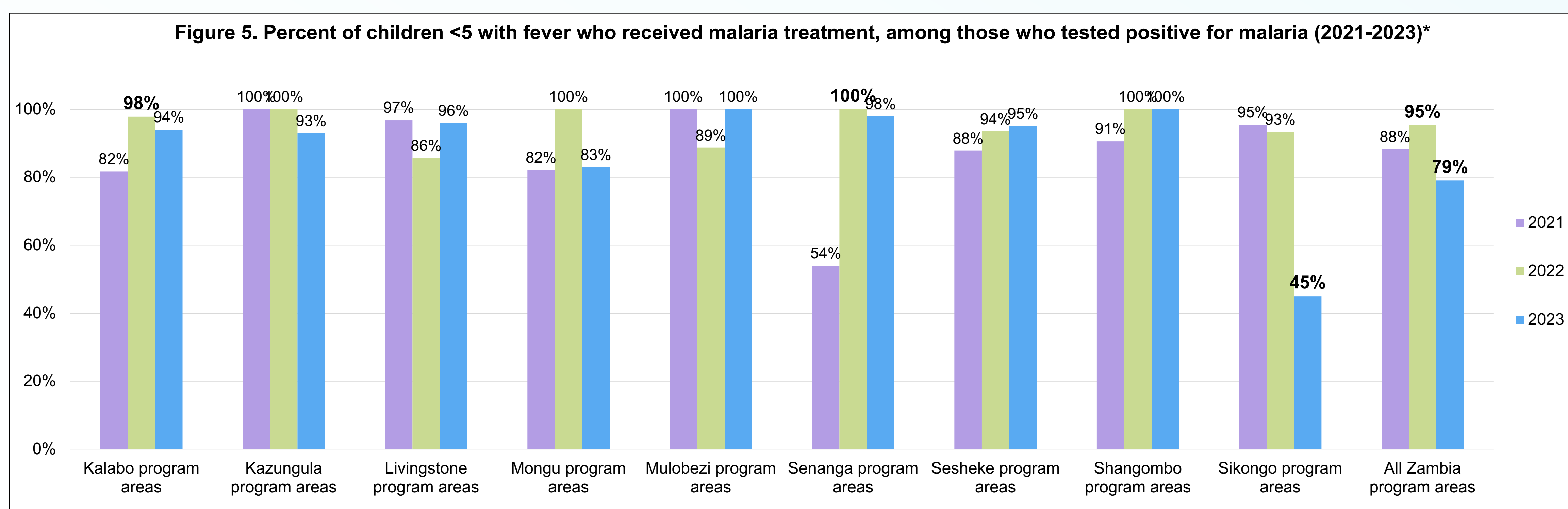
- In 2023, 76% of children <5 with fever in the past two weeks sought care from a health facility or CHW within 24 hours of fever onset, a statistically significant increase from 65% in 2022 ($p < 0.001$).

Provision of malaria test among children <5 with fever who seek care from a health facility or CHW (Figure 4)

- In 2023, 95% of children <5 with fever who sought care from a health facility or CHW received a malaria test, a statistically significant increase from 88% in 2022 ($p < 0.001$).

Provision of malaria treatment among those who tested positive for malaria (Figure 5)

- Between 2021-2022, the percent of children <5 with fever who received malaria treatment, among those who tested positive for malaria, increased significantly from 88% to 95% ($p = 0.002$). From 2022-2023, however, there was a significant decrease from 95% to 79% ($p < 0.001$). This decrease was largely due to the dramatic decrease within Sikongo District program areas, from 93% to 45% ($p < 0.001$).



*Significant results of a given survey year compared to the prior survey year are denoted by bold text

Methods

- Scope:** These data were part of a larger dataset collected to understand malaria-related knowledge, attitudes, and practices among community members in program areas of IFCBMI.
- Study design:** Yearly cross-sectional household survey administered through a structured questionnaire on KoboCollect
- Sampling frame:** IFCBMI program areas in Zambia
- Sampling:** Systematic interval sampling with random start. Sampling was stratified at the Province, District, Health Facility Catchment Area, and Neighborhood Health Committee levels. Designed to be self-weighting, but survey weights were used to account for minor deviations from the sampling design.
- Respondents:** Female, ≥18 years, informed consent
- Data collection:** Between April – June (2021-2023)
- Data analysis:** Descriptive statistics were calculated with 95% confidence intervals. Statistical tests to compare differences in outcomes over time included unadjusted logistic regression (dichotomous variables) and OLS regression (continuous variables) of the outcomes on an indicator for survey year. The significance threshold was set at .05. Analyzed in STATA v14.2.
- Ethical considerations:** Approved by University of Zambia Biomedical Research Ethics Committee (UNZABREC) and the National Health Research Authority (NHRA) of Zambia.

	2021	2022	2023
Sample size	2541	1982	2553
Respondents who had a child <5 with fever in the past 2 weeks	37.9% (647/1702)	37.3% (515/1393)	38.4% (669/1759)
Children <5 with fever who:			
Sought care from health facility or CHW within 24 hours of fever onset	66.3% (429/647)	65.2% (336/513)	75.8% (505/669)
Received a malaria test, among those who sought care from a health facility or CHW	86% (499/579)	88.4% (397/449)	94.6% (570/603)
Tested positive for malaria, among those who were tested for malaria	65.9% (329/499)	62.9% (250/397)	66.7% (380/570)
Received treatment, among those who tested positive for malaria	88.2% (287/326)	95.3% (237/249)	79.1% (300/380)

Interpretation / Conclusion

- Despite notable progress, many caregivers did not seek care for their child <5 with fever from a health facility or CHW within 24 hours of fever onset. This underscores the importance of ongoing social and behavioral change (SBC) communication in communities, in addition to improving access to health services. IFCBMI will integrate these findings into its 2024-2025 program activities to prioritize SBC for care-seeking behavior at the community level.
- Strides have been made in enhancing the delivery of malaria commodities. Nevertheless, stock-outs of ACTs persist in 2023, particularly in Sikongo District, necessitating further investigation into the specific bottleneck. IFCBMI has partnered with the Faith Leader Advocacy for Malaria Elimination (FLAME) coalition to engage in advocacy efforts on this issue since 2021, contributing to a change in the management of medicines and medical supplies from the Ministry of Health to Zambia Medicines and Medical Supplies Agency (ZAMMSA) and an increase in the national drug budget allocation from 1.4 billion ZMW in 2021 to 3.4 billion ZMW in 2022. Moving forward, IFCBMI and FLAME will aim to keep this issue on the national agenda through targeted advocacy efforts.