



## Research Article

# What happens when the test is negative: Evaluating adherence to malaria diagnostic algorithms among under-five children in the Northern zone of Volta Region, Ghana

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## Abstract

**Background:** In Ghana, the Ministry of Health (MOH-GH) have recommended that every suspected malaria case is tested and treatment given should be based on test results. However, several patients are still given antimalarial drugs without confirmation of malaria. The objective of this study was to determine the proportion of under-five children who received diagnosis of malaria from clinicians even when the test was negative for malaria.

**Methods:** A cross-sectional study was used which involved two randomly selected government-owned hospitals in the Northern zone of Volta region in Ghana. For each hospital, 439 under-five children participated in the study. Adherence to the malaria test results was based on the mRDT and expert microscopy test results in the selected hospitals.

**Results:** Of 878 eligible children screened, 615 (70.1%) tested negative for malaria. Out of the negative test results, 299 (48.6%) were with RDT and 316 (51.4%) with microscopy. 25 (8.4%) and 67 (21.2%) of the RDT and microscopy negative test results were still diagnosed with malaria and treated with antimalarial drugs respectively.

**Conclusion and recommendation:** Despite the institution of the guidelines for malaria case management, some clinicians still prescribe antimalarial drugs to children under five years with negative test results. There is need for enhanced training for health workers on adherence to malaria test results.

## Introduction

The World Health Organization (WHO) and Ministry of Health, Ghana (MOH-GH) have recommended that every suspected malaria case is tested before treatment is given. These tests should be either by microscopy or malaria Rapid Diagnostic Test (mRDT) [1]. In Ghana, even though these guidelines have

been instituted, several patients are still given antimalarial drugs without confirmation of malaria [2]. Additionally, some health providers still prescribe antimalarials to patients who test negative for malaria and thus give the patients medicines they do not need, exposing them to unnecessary side effects and the risk of the actual cause of their infections not being treated [3,4]. The objective of this study was to determine the

proportion of under-five children who received diagnosis of malaria from clinicians even when the test was negative for malaria.

## Methods

A cross-sectional study was used which involved two government-owned hospitals that were randomly selected in the Northern zone of Volta region in Ghana. For each hospital, 439 under-five children participated in the study. These children were those who reported at the outpatient department (OPD) of the selected hospital with fever or a history of fever. Adherence to the malaria test results was based on the mRDT and expert microscopy test results in the selected hospitals. The type of mRDT used was SD BIOLINE malaria Ag Plasmodium Falciparum (HRP2/pLDH) test kits. Finger prick blood sample were used for the malaria infection diagnosis. We obtained ethical approval from the Research Ethical Committee of the University of Health and Allied Sciences (UHAS-REC).

## Results

Of 878 eligible children screened, 615 (70.1%) tested negative for malaria. Out of the negative test results, 299 (48.6%) were with RDT and 316 (51.4%) with microscopy. 25 (8.4%) and 67 (21.2%) of the RDT and microscopy negative test results were still diagnosed with malaria and treated with antimalarial drugs respectively (Figure 1).

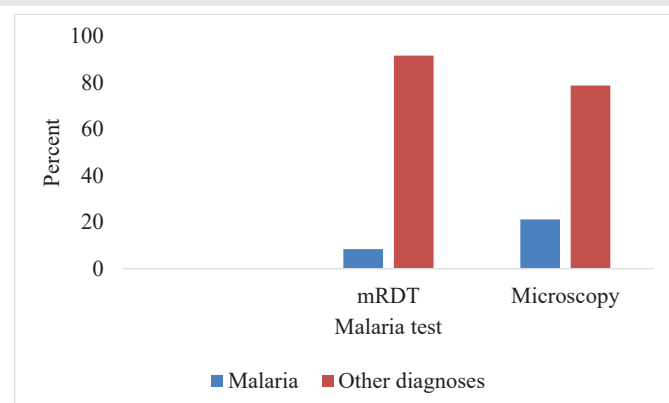


Figure 1: Health workers' diagnoses of malaria with negative malaria test results.

## Conclusion and recommendation

Despite the institution of the guidelines for malaria case management, some clinicians still prescribe antimalarial drugs to children under five years with negative test results. There was a higher adherence to the results of the mRDT than the expert microscopy. There is need for enhanced training for health workers on adherence to malaria test results and also encourage the use of mRDT in hospitals.

## Discussion

This study found out that, of 878 eligible children screened,

615 (70.1%) tested negative for malaria. Out of the negative test results, 299 (48.6%) were with RDT and 316 (51.4%) with microscopy. 25 (8.4%) and 67 (21.2%) of the RDT and microscopy negative test results were still diagnosed with malaria and treated with antimalarial drugs respectively. This finding is contrast to that which was reported in Zambia by Manyando et al. where 68.6% of the under-five children were given antimalarial drugs despite their negative test results [5]. Similarly, in Malawi, Chinkhumba and colleagues reported that 58% of children less than 5 years who tested negative for malaria using mRDT were still diagnosed as having malaria [6]. In a randomised controlled trial in Ghana, 46.0% of the persons who tested negative for malaria were still given antimalarial drugs [7].

The possibly reason for clinicians not strictly adhering to malaria test results could be as a result of lack of capacity to effectively diagnose other causes of fever, hence there is need for enhanced training for health workers on adherence to malaria test results [8, 9].

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