



## Accessibility of Antimalarials in Secondary Health Care Facilities and Community Pharmacies in Lagos State – A Comparative Study

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### KEYWORDS

**Accessibility;  
Antimalarial;  
ACTs;  
Community  
Pharmacies;  
Secondary  
Health  
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### ABSTRACT

#### Background

The attainment of the 6th Millennium Development Goal to halt and reverse the effects of malaria and other diseases by 2015 depends on the accessibility of Artemisinin Combination Therapy (ACT) which is now the first line antimalarial therapy for uncomplicated malaria. The main Objective of this study was to assess the availability and affordability of ACTs in Secondary Health Care (SHC) facilities in Lagos State and community pharmacies located within 200 meters of these facilities.

#### Method

Two SHC facilities each were randomly selected from four (4) geographical zones and the only one (1) in the fifth zone was selected, making a total of nine (9) facilities which were surveyed. The eleven (11) community pharmacies located within 200 meters of these health care facilities were also used for the study. A modified HAI was used for data collection on medicine price and availability was used for the study.

#### Results

ACTs (artemisinin/lumefantrine) were prescribed 90% of the time as first line antimalarial. About thirty seven percent (37.5%) of the hospitals did not have the drug in stock at the time of visit and drugs had been out of stock for upward of three weeks. Private partnership pharmacies do not stock antimalarials as a matter of policy, since the drugs are supposed to be obtained free from the hospital. This first line antimalarial cost about six hundred and forty naira (N640) in the private community pharmacies.

#### Conclusion

ACTs are not always available in the hospitals in Lagos State; patients therefore depend on community pharmacies and patent medicine stores for their ACT supply. Since 93.9% of Nigerians live in subjective poverty, the cost of first line ACT antimalarial remains unaffordable and inaccessible.

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### INTRODUCTION

Africa bears the greatest burden of the malaria death toll with an estimated 30% of all recorded deaths during pregnancy attributed to malaria infection. Malaria is also known to cause about 300-500 million cases of acute illness each year.<sup>1,2</sup> The disease is highly endemic in Nigeria and is responsible for 29% of childhood deaths, 25% infant mortality and 11% maternal mortality.<sup>3</sup>

Artemisinin Combination Therapy (ACT) has now become the first line drug for treatment of uncomplicated malaria and ACTs have been proven to be highly effective against malaria.<sup>4</sup> Since elimination of malaria has not been achieved; the key objective in dealing with the disease has been to

provide medications that are highly effective in killing the parasite in a short time and restoring the patient to sound health. One of the main goals of Roll Back Malaria<sup>5</sup> is to provide at least 60% of those suffering an attack of malaria with prompt access to treatment within 24 hours. It is therefore important that a timely access to antimalarials by all groups of people, even the poorest in the community is actualized. World Health Organisation (WHO) and Management Sciences for Health (MSH) defined various components of access to medicines as physical availability, affordability, geographical accessibility and acceptability to the patient.<sup>6</sup> Barriers to access can develop along anyone of these component parts.<sup>7</sup> Poor supply chains, weak stock

management practices, and inadequate lead-time planning threaten the regular availability of drugs in the public health system.<sup>8,9</sup> In addition, unpredictable flow of funds in many countries, combined with inadequate distribution from central warehouses to peripheral points of care, lead to unavailability and inaccessibility of these drugs at the points of need. Physical availability of ACTs at the service points may sometimes be an issue as observed in the studies carried out in Kenya where a quarter of public health facilities had none of the nationally recommended ACTs in stock and three quarters lacked the full range of weight specific packs required.<sup>10</sup>

Prescribers also have a role to play in improving access to ACTs. A survey carried out in 2006 by Oreagba et al found that though 59.2% of prescribers in Nigeria reported a favorable disposition to the change to ACT as first line antimalarial, their prescribing habits did not reflect the favourable disposition. Only 5.9% of malaria prescriptions at the time of survey had ACTs. By 2008, the workers found a gradual increase in the prescribing of ACTs in most health facilities in the country.<sup>11</sup>

The goal of this study was to determine the availability and affordability of the current first line antimalarials, ACTs, to the Nigerian populace using Lagos State as a representative sample. The objective of the work was to determine the availability of first line ACTs in secondary health institutions and in community pharmacies located 200 meters within the secondary health care institutions studied. **METHODS** Study Center - The study was carried out in Lagos State, Nigeria. There are sixteen secondary health facilities in the state dispersed within its five geographical divisions. Two institutions were randomly selected from each of the four geographical zones with more than two secondary health facilities while the only secondary health facility in the fifth zone was automatically included in the study, making nine (9) institutions. Each facility has a Joint Venture Pharmacy (JVP).

The JVP is a private pharmacy attached to the

hospital. However they are not permitted to stock antimalarials because these drugs are supposed to be supplied free to patients. Eleven (11) Community pharmacies found within 200 meters from the selected health institutions were also surveyed and included in the study.

### Data Collection Tools

A modified version of the WHO/HAI standardized questionnaire for data gathering on medicine availability and prices was pretested and administered to the hospital pharmacists and community pharmacies to gather data on prices and availability of ACTs. The community pharmacies were surveyed as alternative sources of drugs within the vicinity of the health institution.

Adherence of prescribers to National policy guidelines on malaria treatment and prescription patterns were assessed through prescription sheets. Information on stock-out of ACTs and stock-out duration was obtained from stock cards. Three ACT types as recommended in the National Treatment Guidelines were used as prototype for this study. They are Artemisinin/Lumefantrine, Artemisinin/Amodiaquine, and Artesunate/Artemeter injection. Ethical approval for the work was obtained from the Lagos State Health Management Board.

### RESULTS

The data in Table I shows there is a state antimalarial policy in Lagos state. The policy caters for all resident of Lagos state to get free antimalarial treatment in all public health facilities. In Table II, 90% of prescriptions for malaria treatment had ACTs while 10% had other antimalarials especially Sphadoxine/Pyrimethamine combination which is used as first line drug for Intermittent Preventive Treatment (IPT) during the second and third trimesters of pregnancy.

**Table I: State Antimalarial Policy**

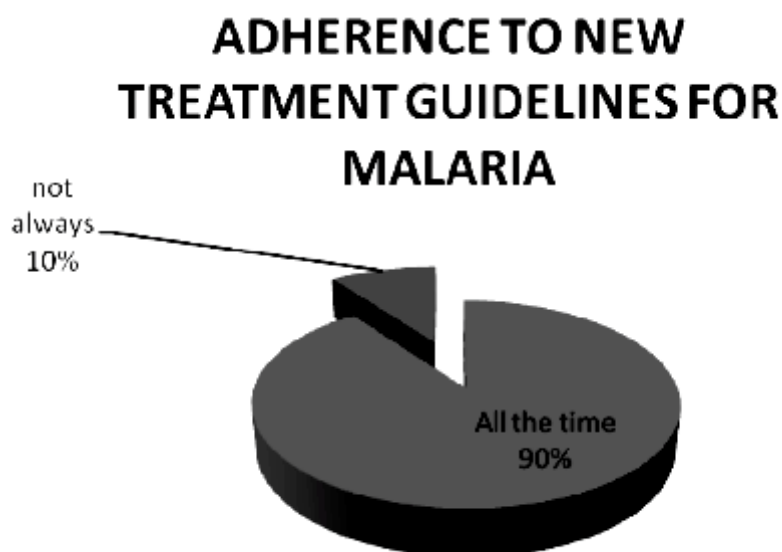
STATE ANTIMALARIAL MEDICINE POLICY	FREQUENCY	PERCENTAGE%
YES	100	100
NO	0	0
NOT SURE	0	0
<b>PATIENT FOR FREE ANTIMALARIALS</b>		
Children under 5yrs, pregnant women, elderly person		
Poor patients, children under 5yrs, older children		
Poor patients, children under 5yrs, pregnant women, elderly person.		
Poor patients, children under 5yrs, older children, pregnant women, elderly persons.	100	100

**Table II: Antimalarial prescription for uncomplicated malaria**

Type of Antimalarial Prescribed	Frequency	Percentage
Sulphadoxine/Pyrimethamine	10	10
ACTs	90	90
Total	100	100

On frequency of stock-outs for ACTs and stock-out duration, 70% of respondents reported frequent stock-outs which was attributed to the large number of patients being attended to on a daily basis. The remaining 30% had stock-outs but the stock-outs

were not frequent. From the store records, 10% of the health care facilities had stock-outs that lasted for up to 3 days; 70% had stock-outs that lasted up to 3 weeks; and 20% had stock-out that lasted up to 3 months (Fig 3).



—Figure 1: Adherence to new treatment guidelines for malaria—

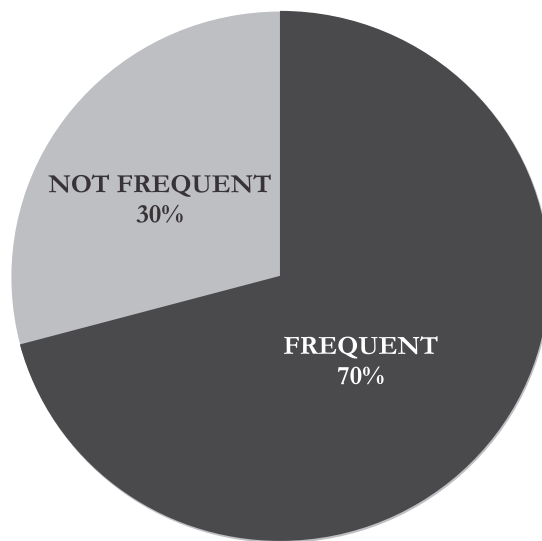


Figure 2: Stock out frequency of antimalarial in the secondary institutions

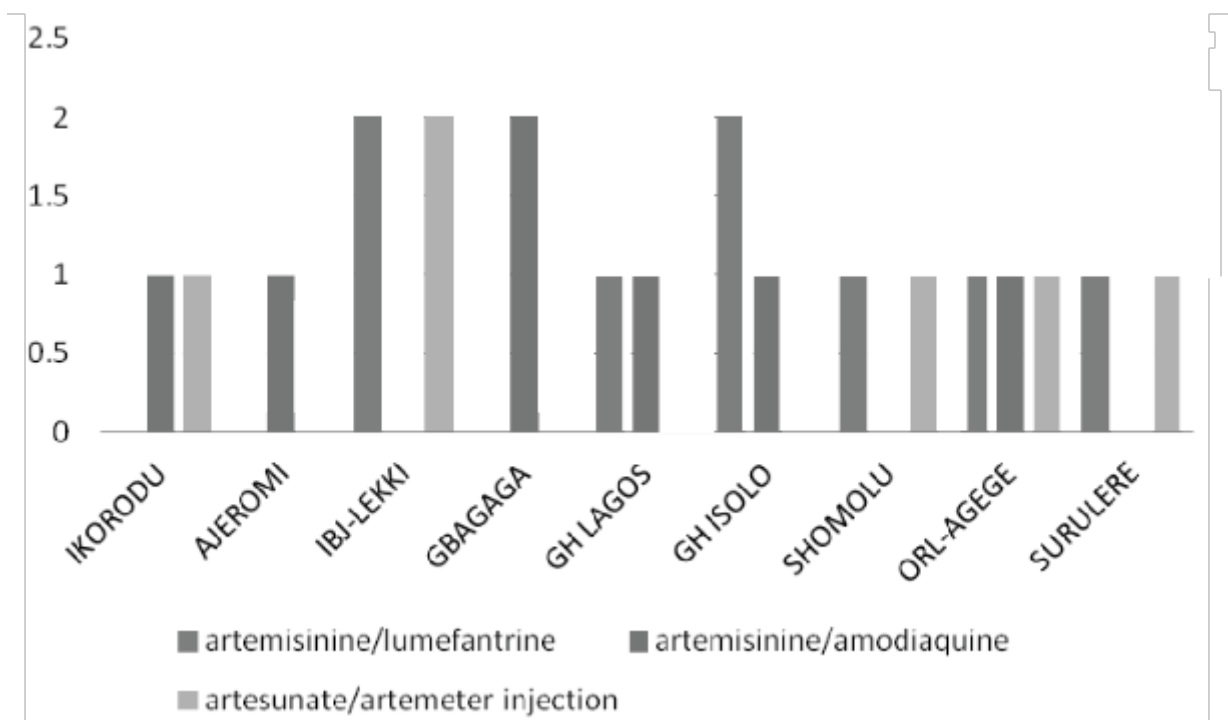


Figure 3: Availability of ACTs in the secondary health care institutions

At the time of visit, six of the nine institutions had the first line ACT (artemisinin/lumefantrine) in stock, six (6) had artemisinin/amodiaquine and five had artesunate/artemeter injection. They had these alongside one or two other antimalarials. Only one facility (Orile-Agege) had the (3) types at the time of

visit (Fig 3). The community pharmacies however stocked the entire range of antimalarials including chloroquine which is no longer on the Nations treatment guideline. Amodiaquine was also in stock in the community pharmacies as single dose medication (Fig.4).

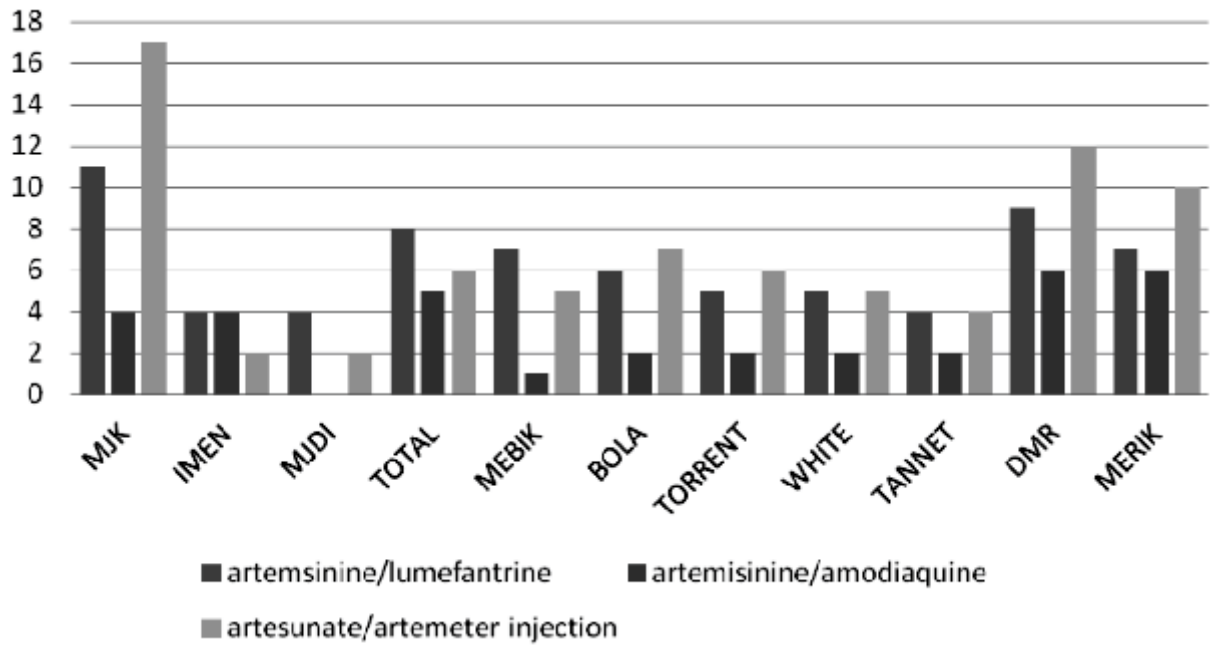


Figure 4: Availability of ACTs in community pharmacies

In the community pharmacies, Artemisinin/Lumefantrine cost about N640.00 while Artemisinin/Amodiaquine cost N658.82. The antimalarial chloroquine which was still

available in community pharmacies cost N125.56, a m o d i a q u i n e N 1 5 0 . 0 0 a n d sulphadoxine/pyrimethamine N150.00 per dose.

## DISCUSSION

The prescribers in Lagos state secondary health facilities have adapted quite well to the new guideline on malaria management. This study records a 90% prescription of ACTs for uncomplicated malaria. This is an impressive improvement on the 5.9% reported in an earlier study.<sup>11</sup> The key to accessibility to ACTs is in availability and affordability. A drug is affordable if it cost 10 cents or less per day for the complete treatment and WHO considers physical availability, affordability, geographical access and acceptability to the patient as vital components of

access to medicines. The Lagos State government in an attempt to make ACTs accessible instituted the Eko Free Drug Programme which provides free malaria treatment for the inhabitants of the state regardless of age through primary and secondary health facilities.<sup>4</sup> There are 16 secondary health facilities that are well dispersed in the state to allow for easy access. This program was supposed to address the challenges of accessibility. However, this study reveals that in spite of the free drug program, availability of the first line antimalarials in the hospitals is still a big challenge. The drugs are sometimes not available in the health facilities with 70% of the hospital surveyed, experiencing stock-

out lasting for as long as three (3) weeks. The malaria situation analysis carried out by Federal Ministry of Health in 2000 reported that 85% of health facilities in the rural areas had stock-outs of antimalarials.<sup>13</sup> Medicine availability has been cited as a key determinant of access to and utilization of health services<sup>14,15</sup> and indeed a measure of quality of care.<sup>16</sup>

A study carried out in Enugu State, South Eastern Nigeria showed that 88.8% of public health facilities had ACTs, and 83.3% had artemeter/lumefantrine available at the time of visit.<sup>17</sup> Forty four percent (44.7%) of private health facilities had ACTs and 36.8% had artemeter/lumefantrine at the time of visit. This shows a relatively high degree of availability of ACTs in health institutions in this Eastern State. Lagos State however had lower availability since seventy percent (70%) of the institutions reported various degrees of stock-outs of ACTs at the time of the visit. A study carried out in Tanzania<sup>18</sup> found that since the change in the antimalarial management policy and by extension the first line drug for malaria, all public health care facilities had a good stock of ACTs while the stocking in community pharmacies reduced. A contrasting situation was seen in Ghana, the antimalarials recommended in the health policy were not readily available in the most accessible community pharmacies.<sup>19</sup> Thus the situation of stock-out in government hospitals at any time, for any reason and for any duration leaves the patients with the only option of sourcing ACTs from community pharmacies or patent medicine stores within the vicinity of the hospital. The treatment which would have been free ends up costing the patients some amount of money.

In line with the WHO guideline of treating malaria with ACTs as first line drugs,<sup>4</sup> other antimalarials were not available in the Lagos state government hospitals except sulphadoxine/pyrimethamine which is used as intermittent preventive treatment in pregnancy. In Enugu as at 2010, the public health facilities still used sulphadoxine/pyrimethamine

and chloroquine for the treatment of malaria. This is contrary to the WHO guidelines for malaria treatment and it is a drawback to the achievement of improved and efficient malaria treatment.

All the community pharmacies selected for the study (100%) had the first line ACT (artemisinin / lumefantrine) and artesunate/artemeter injection while 90.9% had artemisinin/amodiaquine in stock at the time of visit. Since these community pharmacies are just 200 meters away from the hospitals, the patients have the choice of going to these pharmacies to source their ACTs. The price of medicines is generally not regulated in the community pharmacies and patent medicines stores in Nigeria. The survey price of ACTs in the community pharmacies showed that the first line ACT (Artemisinin/lumefantrine) costs an average of N640 for complete treatment. Although N640 may not seem much to save a life, it is however expensive and unaffordable in a country where 60.9% of the populace live in absolute poverty, 61.2% live below \$1(N150) a day and 93.9% live in subjective poverty.<sup>20</sup> Cameron et al<sup>9</sup> had reported an average of 65% availability with unaffordable prices in the private facilities in the low and middle income countries. They therefore concluded that constraints to access to medicine at public health facilities are mainly issues of supply while affordability is the major challenge with private facilities.

The reality in Lagos State is that community pharmacies are well stocked with both ACTs and other antimalarials. The continuous stocking of the phased out antimalarials by community pharmacies is a hindrance to the effectiveness of the new malaria treatment policy. The community pharmacies never run out of stock of the other antimalarials since they are waiting to serve patients who present with such prescriptions from prescribers who did not adhere to the guideline of prescribing ACTs or patients who choose to self medicate. If ACTs are not readily available in the public hospitals in Lagos state and they are not affordable from the private community pharmacies, then accessibility of ACTs for malaria treatment in

Lagos State remains a figment of the imagination.

This study also reveals that 101 patients are seen daily in each of these hospitals for malaria treatment leading to an estimated 48,000 patients per month being managed by secondary health facilities alone, not counting the primary health institutions and the tertiary hospitals located within the state. This large number may explain the stock-out syndrome. Nevertheless, because Nigeria is within a malaria endemic region, proper planning ought to be put in place to ensure adequate availability of ACTs. As a matter of fact, proper planning is a prerequisite for any institution that ventures into free treatment program. The State Joint Venture Partnership Pharmacies do not stock antimalarials but it has been proven that working with private-for-profit sector may improve access if adequate regulations are put in place. A study carried out in Nigeria by Tetteh and Adeya<sup>21</sup> recommended improved funding and international competitive bidding for stable availability of artemeter/lumefantrine; The Affordable Medicine for Malaria (AMFM) program for the supply of highly subsidized ACTs is in place in Nigeria. From this study, it appears that the logistics of supply and distribution is yet to be adequately worked out in Lagos State. Pehudof et al have proposed a paradigm shift which states that 'health and by extension medicines, should be considered as human rights'<sup>22</sup>

## CONCLUSION

Though the prescribers in the secondary health facilities in Lagos State are compliant with the new antimalarial drug policy by prescribing only the ACTs for the management of uncomplicated malaria, the institutions' pharmacies however experienced stock-outs of the drugs ranging between three (3) days to three (3) months. The large number of patients being treated in Lagos State therefore depends on community pharmacies and patent medicine stores for the supply of their ACTs where the cost for first line ACTs remains expensive and unaffordable. The government may have to review the stocking policy with the Joint

Venture Pharmacy, a Private-Public institution for improved supply of drugs within Lagos State hospitals. Appropriate price regulations/subsidy will however be required to ensure affordability. It is expected that the state hospitals would ensure that ACTs are well stocked and adequate measures put in place to avoid stock-outs. Accessibility to first line antimalarial drug remains a challenge within the state.

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