

**ACHIEVING THE 6TH MDG: AN EVALUATION DRUG TREATMENT OF MALARIA
IN SELECTED PHC IN OSUN STATE**

ABSTRACT

Introduction: The burden of malaria in Nigeria and Africa is well documented. The current Nigeria anti-malaria drug policy has recommended artemisinin-based combination therapy (ACT) as the first-line drug treatment for uncomplicated malaria since 2005. It is now 8 years since the adoption of ACT and two years to the set time for the achievement of the MDGs.

Objective: To assess the adherence of the PHC to the new policy on drug treatment for uncomplicated malaria as well as determining factors.

Method: Using a pro-forma, relevant information about drug prescription for malaria cases between January 2008 and December 2009 was extracted from patients' folders in the 3 comprehensive health centres being used by LAUTECH Teaching Hospital, Osogbo. Additional data were also collected through the use of in-depth interviews. Data were analyzed with Epi-Info software 3.4.2.

Result: A total of 8881 episodes of Malaria were analyzed out of which males 0-5years constituted the highest. The commonest prescribed anti-malaria was oral Chloroquine (21.6%). Although, for Ilie and Atelewo CHC, CQ was the commonest drug prescribed, 41.6% and 25.5% respectively, while for Akogun CHC alone, it was Artesunate + SP. Akogun CHC has the highest prescribed pre-packaged ACT. Factors responsible for inappropriate prescription were non-availability and perceived patients' non-affordability and unwillingness to buy drugs.

22 **Conclusion:** Prescription of CQ and SP as mono-therapy continues to prevail in the CHC. There
23 is urgent need for ensuring compliance to the current and acceptable treatment for malaria. Other
24 means of sustaining availability of anti-malaria drugs should be considered.

25 KEY WORDS: anti-malaria, MDG, PHC, drug treatment, ACT

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INTRODUCTION

28 Reports have it that 99% of mortality from AIDS, Malaria and TB live in the developing
29 countries with about 780, 000 deaths each year ¹. Malaria is a disease of enormous economic and
30 social burden and hindrance to human development affecting 3.4 billion people (half) of world
31 population ². Malaria being the second most common cause of infectious disease-related death in
32 the world, after tuberculosis ³ is responsible for about 50% of out-patient visits, 40% of hospital
33 admissions and 30% of mortalities more among under-five years of age in Nigeria ⁴. In an effort
34 to address the prevailing and overwhelming health and development concern of various countries
35 especially in the developing world, the MDGs were officially established following the
36 Millennium Summit of the United Nations in year 2000 with goal 6 focusing on combating
37 HIV/AIDS, Malaria and other diseases ¹. Key interventions to the Malaria control include
38 prompt and effective treatment with ACT and which Nigeria adopted as the first line drug
39 treatment of uncomplicated *P. falciparum* malaria in 2005 ⁵.

40 The monotherapy antimalaria such as CQ, SP, Amodiaquine and artesunate have been shown to
41 be ineffective. The recommended ACT for Nigeria was Artemether + Lumefantrine and
42 Artemisin + Amodiaquine ⁵. How has this policy been adhere to in PHC 5 years after the
43 adoption? It is therefore important to evaluate the anti-malaria prescription habits in PHC
44 especially those attached to a teaching hospital that should serve as a prototype for other PHCs
45 due to the expertise there. A study in a teaching hospital in Nigeria in 2006 showed anti-malaria
46 prescription of Artemesinin based combination drugs constituted 26.2% of all the antimalarials
47 prescribed followed by Sulphadoxine+Pyrimethamine 564 (20.0%).⁶ The 2010 Nigeria Malaria
48 Indicator survey reported that only 6% of under five received ACT while 40% took other anti-
49 malarias ⁷. A previous facility-based study in the South-East Nigeria 88.8% of public hospital

and 34.2% of private hospital use ACT as first-line treatment of uncomplicated Malaria ⁸. The correct use of anti-malarial drugs is the key not only to therapeutic success but also to deterring the spread of drug resistance malaria. The attainment of the MDG goal with regard to Malaria burden depend largely on adherence to the anti-malaria policy of ACT for uncomplicated malaria. This study therefore sought to assess the pattern of anti-malaria prescription in the health facilities as well as identify factors affecting the choice of prescriptions in the respective CHCs.

METHODOLOGY

Study Area: This Study was carried out in Osun state in the South-western Nigeria. The three health facilities being used by the Community Medicine department of Ladoke Akintola University of Technology (LAUTECH) were used for the purpose of this study. Two of the health facilities are in Osogbo (Osogbo local government) and are the urban Comprehensive Health Centres (CHC) while one is in Ilie (Olorunda local government) is the rural health centre. The facilities were chosen because they are the CHC for the community Medicine department of LTH, Osogbo. Patients are usually attended to by residents and consultants in posting at the various centres but nursing staff and Community Health Extension Workers (CHEWs) both from the LTH (LAUTECH Teaching Hospital) and from the owner local government also attend to patients as occasions demand.

STUDY POPULATION: Cases of Malaria treated between January 2008 and December 2009 in the three CHC in the study area. No sample was taken as all cases seen during the period were used except cases of Malaria in pregnancy- which are usually recorded in separate folders and therefore excluded.

STUDY DESIGN: Descriptive retrospective study.

DATA COLLECTING INSTRUMENT AND MANAGEMENT:

Quantitative data: a self-developed proforma was used to retrieve/extract data on age, sex and drug treatment.

Qualitative data: key informant interview and current drug availability were used to obtain additional information.

79 **Data Collection technique:** Medical students helped to retrieve information from the folders
80 while the one of the researchers got the qualitative data. Data were collected between July and
81 September 2010.

82 **Data Analysis** was done by Epi Info software version 3.4.1. Data were presented in form of
83 tables. Univariate and bivariate analysis was done with level of significance set at p value of
84 0.05.

85 **Limitation of the study:** Parasitological diagnosis (microscopy or rapid diagnostic test) was not
86 made in many of the cases, so malaria diagnosis was based on clinical features as made by the
87 attending health personnel. The statuses of the prescribers (whether doctors, nurses or CHEWs)
88 were not considered as this may actually determine the drug prescription. This is because it could
89 not be easily identified in the folders; while some prescribers write their names, other put
90 signatures only. Also, the study did not assess the knowledge of prescribers concerning
91 correctness of prescription and so the practice discovered herein does not necessarily equate to
92 their knowledge or the policy of the hospital.

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RESULTS

Quantitative Results

A total of 8881 Malaria cases were attended to during the period that met the inclusion criteria and is presented as in Table 1. Table 2 shows age and sex distribution of the malaria cases seen in the review period. The result showed that there were 8881 cases in all the 3 CHC with 6650 (74.9%) being children less than 5 years and others older children and adults. The male: female ratio was 0.93, while 1906 (21.5%) were from Ilie CHC, 3980 (44.8%) were from Akogun CHC and 2995 (33.7%) were from Atelewo CHC. Table 3 shows distribution of cases in CHC by age.

Table 4 shows the pattern of anti-malaria prescription in the different CHC. Chloroquine (CQ) remained the most prescribed 1918/8881 (21.6%) for all the 3 CHC combined together but while CQ was the most prescribed for Ilie and Atelewo CHCs [793/1906 (41.6%) and 763/2995 (25.5%) respectively]; Sulfadoxin-Pyrimethamine (SP) and Athemeter (AT) was the most prescribed for Akogun CHC. Akogun CHC was the facility with the highest percentage of prescribed ACT [both preformed and non-preformed i.e. {ACT and AT+SP} and {AT+ Amodiaquine (AMQ)}] totaling 2347/3980 (58.9%) followed by Atelewo CHC 701/2995 (23.4%) and lastly Ilie CHC 337/1906 (17.6). The pattern of prescription was statistically significant with respect to the facilities.

Qualitative Results

The most senior nursing officer-in-charge of each facility was interviewed

It was gathered in all the CHC that there is awareness of the current policy for malaria treatment although it was also said that there was no copy of the malaria national guideline in any of the

facilities. Usual challenges are those of non-availability of the ACT supply from the local government. This is however less in Akogun CHC which was pointed out that it was due to the drug revolving scheme being run. In Ilie and Atelewo CHC, drug procurement is from the local government which is irregular; most of the drugs being supplied are CQ, SP. Sometimes however, AMQ, AT are also supplied and less frequent is preformed ACT. In Akogun CHC, drug procurement is by Drug Revolving Scheme which made appropriate drugs achievable and realistic. On why drug revolving scheme is not operative in Ilie and Atelewo CHC; it was reported that it was strictly government policy to supply free drugs. In Ilie, it was said that most of the patients would not purchase drugs that were not supplied in the clinic being in the rural area; however, in Atelewo and Akogun CHC, even when ACT were not available at the facility, it could be prescribed for the patients to buy. The staff in Ilie claimed ACT was not even available in the patent medicine store in the village which could make its prescription even more difficult.

On inspection of anti-malaria available in the health facilities; in Ilie CHC; CQ, SP, and few AMQ were available but AT and ACT were not available at the time of study. In Atelewo CHC; CQ, SP, AMQ, AT were available. In Akogun CHC: SP, AMQ, AT and ACT were available. Table 5 shows the relative quantity available as at the time of data collection.

DISCUSSION

The age distribution is similar to report of the Nigeria Malaria fact sheet where 86% of Malaria burden were in children under five ^{7,9} but different from that of Noland who reported largest burden of Malaria among 5 – 9 years of age although the test was confirmed by microscopy ¹⁰. The prescription of CQ, AMQ, SP and monotherapy AT found in this study both negate the national guideline and WHO recommendation for the treatment and control of Malaria especially in view of the MDG actualization ^{4, 5, 11, 12}. This wrong prescription is about 7 out of 10 in Ilie CHC, 6.5 out of 10 in Atelewo and 2.5 out of 10 in Akogun CHC. Monotherapy including that of AT has been suggested to likely result in resistance quickly and that its parasitaemia clearance is low ¹³. Similarly the CQ/SP combination is not recommended for treatment of Malaria by the current policy since it is not AT based but this represents about 9%, 15% and 6.5% in Ilie, Atelewo and Akogun CHC respectively. Similarly, AT combination with CQ or SP is not recommended which is also high especially in Akogun CHC. A study in the GOPD of ABUTH ¹⁴ showed high prescription of CQ and monotherapy artemisinin although the study period was in 2006 only one year post-adoption of the ACT policy compare to five year post-adoption in our study. The hitherto (at the time of this study) prescription of these CQ and other monotherapies in these CHCs which are mainly by resident doctors would have been worrisome since it was expected that they should know the standard regulation but the free healthcare in Atelewo and Ilie CHC with irregular ACT supply made some prescriptions inevitable. It was observed that a patient receiving treatment for Malaria in Akogun CHC was likely to receive an Artesunate and SP combination while that in Ilie and Atelewo CHC was more likely to receive CQ. It was more likely to receive ACT treatment in Akogun CHC than in Ilie and Atelewo CHC. It is however in

contrast to the study in Enugu state where 88.8% of the public hospitals studied have ACT present at the time of study and almost all the drugs were supplied by the government.

The practice of Drug Revolving Scheme in Akogun CHC seems to have assisted in the correct adherence to ACT prescription by making appropriate drugs available all the time which has also been reported elsewhere^{15,16}. The prescription pattern observed in this study can be corroborated by the anti-malaria in stock in the respective CHC. It is not surprising therefore that Akogun CHC has the highest prescription rate of ACT. Where DRF is not practice in the public hospitals, correct prescriptions should then be made for purchase outside the facility although patients generally tend to resist this practice.

Conclusion: The drug prescription pattern in these health facilities being managed or supported by staff in a teaching hospital is unacceptable. The prescription of – CQ, AMQ, SP including monotherapy AT will undermine the attainment of the MDG goal.

Recommendation: The possibility of having a drug revolving scheme in the other centres should be further evaluated. Further research is needed about prescribers' knowledge and hindrances as well as community perception to purchasing drugs when not available in the health facility.

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175 **TABLES**

176 Table1: **Distribution of cases in the three CHCs**

HEALTH FACILITY	NO OF MALARIA CASES	%
ILIE CHC	1906	21.46
AKOGUN CHC	3980	44.82
ATELEWO CHC	2995	33.72
TOTAL	8881	100.00

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178 Table 2: **Distribution of age by sex of the malaria cases**

		SEX		
		MALE	FEMALE	Total
AGE	<5 YEARS	3330	3320	6650
	>5 YEARS	958	1273	2231
Total		4288	4593	8881

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183 Table 3: **Distribution of cases in different CHCs by age**

		<5 YEARS	>5 YEARS	Total
CHC	ILIE	1417	489	1906
	AKOGUN	2999	981	3980
	ATELEWO	2234	761	2995
Total		6650	2231	8881

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186 Table 4: **Pattern of Anti-malaria Prescription in the CHCs**

	ANTIMALARIA PRESCRIPTION								
HEALTH FACILITY	CQ	SP	AT	CQ+ SP	CQ+AT	AMQ+AT	SP+ AT	ACT	TOTAL
ILIE CHC	793 (41.6)	344 (18.1)	206 (10.8)	183 (9.6)	43 (2.7)	71 (3.7)	79 (4.1)	187 (9.8)	1906
AKOGUN CHC	362 (9.1)	214 (5.4)	233 (5.9)	257 (6.5)	567 (14.2)	661 (16.6)	952 (23.9)	734 (18.4)	3980
ATELEWO CHC	763 (25.5)	52 (17.6)	346 (11.6)	455 (15.2)	202 (6.7)	180 (6.0)	162 (5.4)	359 (12.0)	2995
TOTAL	1918 (21.6)	1086 (12.2)	785 (8.8)	895 (10.1)	812 (9.1)	912 (10.3)	1193 (13.4)	1280 (14.4)	8881 (100)
	$\chi^2 = 2.33$; df= 14; $p < 0.0001$								

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192 Table 5: **Estimate of Anti-malaria stock Available in the CHCs at time of Study**

	CQ	SP	AMQ	AT	ACT
ILIE CHC	√√√	√√	√√	X	X
AKOGUN CHC	√	√√	√√√	√√√	√√
ATELEWO CHC	√√√	√√√	√√	√	X
	X out of stock √ very few √√ fairly many √√√ large quantity relatively				

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