Assessment of the use of Artemisinin based Combination Therapy (ACT) for the Treatment of Uncomplicated Malaria in NHIS Accredited Healthcare Facilities in Lagos, Nigeria

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Abstract

Introduction:
Malaria has been recognized globally as one of the public health challenges of sub Saharan Africa with its attendant high morbidity and mortality rates. In Nigeria its effect to the health system is seen in the abysmal indices recorded especially for maternal and child health. The use of ACT in the treatment of uncomplicated malaria following Chloroquine resistance became a National policy since 2005; however compliance to this policy by clinicians has been a source of worry. This study therefore examines how clinicians adhere to this national policy within the facilities used for formal sector social health insurance program by the National Health Insurance Scheme (NHIS).

Methods
A descriptive study that retrospectively examined the case notes of NHIS enrollees to ascertain the use or non use of ACT in the treatment of uncomplicated malaria using a two stage sampling of facilities in Lagos, Nigeria.

Results
The result indicated a 90% use and 10% non use of ACT by healthcare facilities in the treatment of uncomplicated malaria against the national policy that advocates 100% shift to use of ACT. Therefore the work arouses the consciousness for proper monitoring of policies and integration amongst relevant stakeholders in the Nigerian health system.

Conclusions
The main essence of Government in the health market is to regulate the practice and ensure that consumers have value for money since the market is associated with information asymmetry thus not driven by normal market forces. Policy implementation should be the priority of all policy makers in the health industry and when new and better policies emerge, all relevant stakeholders should buy into it and fast track its implementation. Integration of policies should be on the front burner as this will help in the internalization and acceptance by all concerned in such policies.

Recommendations
The National Malaria Control Program should set up active monitoring teams all over Nigeria to monitor strict adherence to the use of ACTs in the treatment of uncomplicated malaria. Evidence based findings should be distributed to healthcare facilities on the benefit of the use of ACTs to the patients, doctors and the economy. There should be synergy between all agencies of Government in the implementation of these public health interventions. It is expected that the National Malaria Control Program should advocate to all other sister agencies to streamline their operation to suit the use of ACTs since it has been established to be the best for the country.

Important policy guide like change of treatment modalities should be advocated to the states to enforce the implementation. Therefore the Lagos State Hospital monitoring body should assist in the implementation of this type of important policy and offenders should be sanctioned.

Introduction
The National Health Insurance Scheme (NHIS) is an agency of Government saddled with the responsibility of guaranteeing financial risk protection to all Nigerians. Part of the Scheme’s mandate is the maintenance and improvement of quality of care to its enrollees. Treatment of common illnesses that contribute to high
mortality rate like Malaria is considered a top priority. Malaria, according to the National Malaria Control Programme is responsible for millions of deaths recorded around the globe. Most particularly, it causes a huge epidemiological and economic burden in Africa and it continues to cripple development in the region (NMCP, 2015). It is estimated that about 132 billion naira is lost in terms of malaria treatment cost, prevention and loss of man hour (FMOH 2007). Today it is clear that malaria is a high contributor to disability adjusted life years (DALY) in the country.

In Nigeria, malaria is highly endemic and accounts for more cases and deaths than any other country in the world. There is an estimated 100 million malaria cases with over 300,000 deaths every year in Nigeria. In addition, it is responsible for about 11% of all maternal deaths. It is responsible for about 60% of all outpatient visits. Malaria is also the leading cause of mortality in children under five in Nigeria, causing about 30% of all hospitalizations. It has a prevalence of about 50.3% amongst children aged 6-59 months in south west Nigeria. (US Embassy, 2011). Malaria is responsible for 20% of causes of death of children under the age of five in Nigeria (NMCP, 2014).

Several methods have been employed in the control of malaria in Nigeria. These include prompt and effective case management using Artemisinin based Combination Therapies (ACTs), intermittent preventive treatment (IPT) of malaria in pregnancy, integrated vector management (IVM) comprising of the use of insecticide treated nets (ITN), indoor residual spraying (IRS) and environmental management (EM) (Adigun et al, 2015).

A number of African countries including Nigeria have adopted the use of ACTs as a first line treatment for uncomplicated malaria. This was largely because Plasmodium Falciparum (the malaria causing parasite) developed resistance to chloroquine (WHO, 2007) which was the former drug of choice for treatment of malaria. The use of Chloroquine for malaria treatment has been considered obsolete and replaced with ACTs in line with global best practices (Ajayi et al, 2008).

ACTs are the best known anti-malarial drugs (Mutabingwa, 2005). ACTs are a combination of two active ingredients with different mechanisms of action (WHO, 2015). This combination therapy has hitherto been useful in the treatment of cancer, leprosy, tuberculosis and most recently HIV/AIDS. Some examples of ACTs include Artemether/Lumefantrine, Dihydroartemisinin/ Piperaquine, Pyronaridine/Artesunate and Artesunate/Sulphadoxine Pyrimethamine (Igoche et al, 2006). The advantages of ACTs are their fast action, high efficacy and reduced likelihood of resistance developing. The constraints are access, delivery and cost.

Despite the national policy on ACT as the first line drug in the treatment of uncomplicated malaria, MIS 2010 indicates that over 70% of children treated for malaria in Nigeria receive chloroquine or Sulphadoxine and pyremethamine (US Embassy, 2011).

The Federal Ministry of Health (FMOH) in February 2005 released a National Anti-malaria Treatment Policy; a domestication of the WHO guidelines on treatment of Malaria. The purpose was to strengthen and scale up effective malaria case management in Nigeria. The highlighted aims are: to reduce morbidity; halt the progression of disease into severe and potentially fatal disease and thereby reduce malaria mortality; to reduce the impact of placental malaria infection and maternal malaria-associated anemia through intermittent preventive treatment and to minimize the development of anti-malaria drug resistance (FMOH, 2005). The document also specifically recommended that ACTs be employed as the first option for the treatment of uncomplicated malaria. This policy makes the use of ACTs the gold standard in the treatment of malaria in Nigeria.

In line with the FMOH policy on Malaria treatment, the National Health Insurance Scheme, developed a malaria quality improvement tool for NHIS accredited facilities. This tool developed as part of quality improvement process, is aimed at identifying gaps in the treatment of high index morbidity diseases. The document highlights the minimum standards expected of NHIS accredited healthcare facilities in the contemporary management of malaria. Some of these include the availability of a qualified medical doctor, evidence of detailed history taking for signs and symptoms, evidence of comprehensive physical examination, laboratory diagnosis, and treatment using ACT among others.
Despite the efforts of several Governments and International Agencies to reduce the disease burden of malaria through several programmes and projects, malaria still continues to ravage the Nigerian population especially pregnant women and children under five years of age.

The aim of this study is to assess the use of Artemisinin Based Combination Therapy for the treatment of malaria in NHIS accredited healthcare facilities in Lagos, Nigeria and make recommendations to policy makers

Methods
The study was conducted in Lagos, a densely populated cosmopolitan city and Nigeria’s commercial nerve centre. The study was done during an NHIS routine quality assurance visit to accredited healthcare facilities. This quantitative descriptive research was done using retrospective cross sectional approach. It examines the content of different patient’s case notes in the evaluated healthcare facilities. The assessors used closed ended questionnaires designed to capture adequacy of personnel, laboratory diagnosis, clinical diagnosis and use or non-use of ACT in the treatment of uncomplicated Malaria.

The study used a two stage sampling technique; first Lagos was geographically divided into five zones using purposive, non-probability sampling into Oshodi, Alimosho, Ifako Ijaye axis, Ikeja, Agege axis, Ikoyi, Lagos Island, Lekki axis, Surulere, Mushin, mainland axis and Amu Odofin, Ojo, Apapa axis. The second stage sampling was to randomly select four accredited healthcare facilities from each of the zones. In all twenty (20) healthcare facilities where used in the data collection. The assessors filled the questionnaires after clinically auditing five randomly selected NHIS enrollee’s case notes in each of the healthcare facilities. Data collected was entered, cleaned and analyzed using version 22 of SPSS.

Results
The result of the study is presented in tables and bar charts with some interpretation of the content of the table or bar chart. The frequencies presented and the percentages of the different variables also noted in the result presentations.

Table 1: Availability of qualified health professionals

<table>
<thead>
<tr>
<th>Qualified health professionals</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Doctors</td>
<td>20 (100%)</td>
<td>0 (0%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Pharmacists/Pharm technicians</td>
<td>15 (75%)</td>
<td>5 (25%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Laboratory scientist/technician</td>
<td>16 (80%)</td>
<td>4 (20%)</td>
<td>20 (100%)</td>
</tr>
</tbody>
</table>

Table 1 above shows that 100% of the healthcare facilities have qualified medical Doctors while about 25% and 20% of the facilities were operating without a pharmacist/pharmacy technician and laboratory scientist/technicians. This is further displayed in figure 1.

![Figure 1](image-url)
Table 2: Presence of functional Microscope, slide, Stains, rapid test kits etc.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Yes</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 2 shows that about 85% of the facilities had microscopes and test kits for laboratory diagnosis.

Table 3: Evidence of detailed history taking for signs (e.g., intermittent fever, headache, vomiting, nausea etc) and comprehensive physical examination (e.g., temperature, pulse rate, BP, lymph node etc.) and the ability to establish diagnosis logically using history, physical examination, and laboratory results

<table>
<thead>
<tr>
<th>Evidence of</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>detailed history taking</td>
<td>15 (75%)</td>
<td>5 (25%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>comprehensive physical examination</td>
<td>17 (85%)</td>
<td>3 (15%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Ability to establish diagnosis using history,</td>
<td>17 (85%)</td>
<td>3 (15%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>physical examination and lab result</td>
<td></td>
<td></td>
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</table>

Table 3, shows that majority of healthcare facilities (75%) and (85%) take detailed medical history of the patients and conduct comprehensive physical examination respectively. A significant percentage of the patient 15% were not comprehensively examined or that such were not recorded. Table 3 also shows that detailed history of 25% of cases were not taken or not recorded. Table 3 also indicates that about 85% of the patients’ diagnosis was based on both clinical and laboratory evidence. This is displayed in figure 3 below.

Figure 3
Table 4 shows that that 85% of the facilities had ACTs in their stock of drugs and that about 10% of the patients treated for malaria were not given ACTs.

**Discussion**

The National Health Insurance Scheme operational guideline (NHIS, 2012) provides that a health care facility wishing to be accredited to provide primary care service must have a doctor or at least access to a doctor. This may have contributed to the observation in table 1 above where 100% of the healthcare facilities have at least a qualified medical doctor in their employment. This clearly showed that the NHIS accredited hospitals were either being operated or managed by registered medical doctors. This finding also agrees with an earlier study conducted in urban part of Federal Capital Territory in Nigeria (Obembe T.A et al, 2014).

History taking and thorough physical examinations are steps required in making a clinical diagnosis in medical practice, but some practitioners do not take time to document relevant clinical findings noted in patients. This study showed that few of the patients were seen without good clinical history while some were not properly examined. This does not also support the good clinical practice that considers history and physical examinations as necessary for clinical diagnosis. The study also concluded that in 85% of the cases reviewed, diagnosis reached followed history taking, physical examination and laboratory examination logically. It needs to be further examined whether proper physical examination is causally related to logical diagnosis decisions.

The use of ACTs (as drug of choice) in the treatment of malaria in Nigeria was adopted by the National Malaria Control Program following widespread evidence of chloroquine resistance. About 10% non-compliance to the use of ACT noted in the study may not be unconnected with the argument that ACTs was not on the NHIS drug price list which dates back to 2005 and was in use till August 2015 when this data was
collected. However, a new drug list which has ACTs in it has been approved by NHIS for usage from September 2015. Some quality advocates have argued that artemether and dihydroartemisinin both as mono-therapy in the 2005 drug price list were appropriately priced and those healthcare providers could easily have provided most ACTs to the enrollees at in place of those two; since it was clinically evidenced that ACTs was the best treatment option. In any case, some facilities do not recognize that malaria is the most common cause of morbidity and mortality in the country and therefore do not stock ACT regularly.

Truly ACTs appear to be more expensive and some providers may chose to continue the use of Chloroquine or mono-therapy but they have not considered the cost of resistance to treatment or associated complications arising from poor treatment. Therefore it is cost effective to use ACTs with high efficacy and less toxicity as this will reduce the cost of hospital admissions in cases of resistance and avoidable man hours lost in seeking further care.

The study also revealed that 15% of the healthcare facilities did not have the basic laboratory equipment i.e. microscope, slides, stains and rapid kits required for malaria laboratory diagnosis. Also some facilities do not have the required laboratory personnel to conduct the investigations needed for the diagnosis. This lack of laboratory personnel does not conform to quality standards needed for effective malaria control in Nigeria.

**Conclusion**

The main essence of Government in the health market is to regulate the practice and ensure that consumers have value for money since the market is associated with information asymmetry thus not driven by normal market forces. Policy implementation should be the priority of all policy makers in the health industry and when new and better policies emerge, all relevant stakeholders should buy into it and fast track its implementation. Integration of policies should be on the front burner as this will help in the internalization and acceptance by all concerned in such policies.

**Recommendations/policy implications**

The findings of this research should no doubt have far-reaching implications on the reduction of malaria burden in Nigeria through suggestion to all relevant stakeholders in the fight against malaria. The following recommendations are considered germane in linking the national policies to outcome of the malaria control program in Nigeria.

1. The National Malaria Control Program should set up active monitoring teams all over Nigeria to monitor strict adherence to the use of ACTs in the treatment of uncomplicated malaria. Evidence based findings should be distributed to healthcare facilities on the benefit of the use of ACTs to the patients, doctors and the economy.

2. There should be synergy between all agencies of Government in the implementation of these public health interventions. It is expected that the National Malaria Control Program should advocate to all other sister agencies to streamline their operation to suit the use of ACTs since it has been established to be the best for the country.

3. Important policy guide like change of treatment modalities should be advocated to the states to enforce the implementation. Therefore the Lagos State Hospital monitoring body should assist in the implementation of this type of important policy and offenders should be sanctioned.

4. Providers of healthcare should adhere strictly to best practice established by the Government without being coerced considering the dynamic nature of clinical practice.

5. The National Health Insurance Scheme should step up its quality assurance inspections and quality improvement strategies using proactive indicators to mitigate the effect of poor quality care on enrollees. National treatment guidelines should cut across agencies and have a unified implementation strategy, thus new treatment guideline should be quickly added to NHIS treatment protocol provided it is within the actuarial cost and found to be of public good.
6. Enrollees of NHIS and other consumers of healthcare should be able to demand appreciate care from their healthcare providers based on accepted national treatment protocol.

7. Government through its relevant agencies should continue to monitor service provision to healthcare consumers in Nigeria since information asymmetry associated with health market does not enable the consumers get the best of care required.

**Limitations**

This research is not devoid of limitation and other factor associated with its validity, however, evidence abounds that there is an urgent need to enforce compliance to the use of ACTs in the treatment of uncomplicated malaria in Nigeria.

**References**


9. NHIS (2012). Operational guidelines, National Health Insurance Scheme, Nigeria


