Outcomes of Malaria Treatment with Coartem among under five children in Yobe state, North Eastern Nigeria.

Author(s): Mr. Attahir Abubakar, Dr. Sufiyan M Babale, Mr. Mohammed K Ahmed, Dr. Issa Yusuf, Ms. Jamila S Abdulkadir

Corresponding Author:
Mr. Attahir Abubakar,
State Coordinator Global Fund Malaria, Society For Family Health - Nigeria

Submitting Author:
Mr. Attahir Abubakar,
State Coordinator Global Fund Malaria, Society For Family Health - Nigeria

Article ID: WMC002119
Article Type: Research articles
Submitted on: 28-Aug-2011, 01:38:40 PM GMT  Published on: 29-Aug-2011, 09:17:12 AM GMT
Article URL: http://www.webmedcentral.com/article_view/2119
Subject Categories: PUBLIC HEALTH
Keywords: Malaria, Coartem, Under five children, Treatment

How to cite the article: Abubakar A, Babale S M, Ahmed M K, Yusuf I, Abdulkadir J S. Outcomes of Malaria Treatment with Coartem among under five children in Yobe state, North Eastern Nigeria. WebmedCentral PUBLIC HEALTH 2011;2(8):WMC002119

Source(s) of Funding:
Self funded research

Additional Files:
Article
Outcomes of Malaria Treatment with Coartem among under five children in Yobe state, North Eastern Nigeria.

Abstract

**Background:** Nigeria has an estimated population of 140 million, an infant mortality rate of 75 per 1,000 live births, and an under-five mortality rate of 157 per 1,000 live births. High levels of malaria endemicity, parasite resistance to affordable drugs, and inadequate access to treatment facilities help make malaria the leading killer of children, accounting for an estimated 25%-30% of mortality in children under five, or an estimated 300,000 deaths each year. To achieve the Abuja goals, Nigeria must quickly implement strategies to save 150,000 children from death due to malaria.

**Objective:** The aim of this study is to examine the pattern of fever reportage and the outcome of malaria treatment two days after taking coartem among Children less than five years in Yobe state.

**Methods:** The study was a cross sectional case data reviews conducted between August to December 2010 among 12 private Health Facilities (HF) and 223 Patent Medicine Vendors (PMVs) that were supplied with coartem on fortnightly basis by Society for Family Health and data were retrieved via ledgers during each supply circle.

**Results:** A total of 12,650 children less than five years that were treated for malaria with coartem (ACT) were studied from August to December 2010. The results showed that 3,572 (28%) of the children were within the age range of 6 to 11 months old. Fifty-three percent (6,696) of the total client population were males. Only 24% (3,036) of the children were taking to the health facility within 24hrs of the onset of fever and 36% (4,516) have return to the health facility with improved condition 2 days after taking coartem while 64% (8,100) did not return to the health facilities after the treatment as they said it is waste of time since the child’s condition has improved

**Conclusions:** In conclusion, the study shows that among children under five years that were treated with coartem majority are not been brought back to the health facility to verify the status of the treatment if it has improve, worsen or the condition still remain the same. Therefore, outcome of treatment with coartem shows a promising cure for malaria because of its immediate action when taken. Mothers/caregivers should also be cautioned on the need of adherence to drugs in other to avoid drugs resistance in future.

**Key words:** Outcome, Malaria, Coartem, Under five children.

**Introduction**

Worldwide, malaria kills more than one million people each year. The vast majority of these fatalities occur in Sub-Saharan Africa (SSA), and most of the victims are children less than five years of age. In the context of overall childhood mortality, a synthesis of recent studies and reviews suggests that malaria causes at least 20% of all deaths in children less than five years of age in Africa.

Nigeria has an estimated population of 140 million, an infant mortality rate of 75 per 1,000 live births, and an under-five mortality rate of 157 per 1,000 live births. High levels of malaria endemicity, parasite resistance to affordable drugs, and inadequate access to treatment facilities help make malaria the leading killer of children, accounting for an estimated 25%-30% of mortality in children under five, or an estimated 300,000 deaths each year. To achieve the Abuja goals, Nigeria must quickly implement strategies to save 150,000 children from death every year due to malaria.

The rising threat of Plasmodium falciparum resistance to monotheapies prompted the World Health Organization guidelines for the treatment of malaria to recommend that combinations of Antimalarials be used to treat malaria caused by P. falciparum. Since artemisinin derivatives are the only class of anti-malarial agents to whom resistance outside the Thai-Cambodia border region has not been reported in vivo, the guidelines specifically recommend the use of artemisinin-based combination therapy (ACT). WHO criterion for adequate efficacy of ACT in malaria is the achievement of an average cure rate of ≥ 95% in clinical trials.
Artemisinin derivatives have the most potent and rapid onset of anti-parasitic activity of any anti-malarial drug available today and are active against all Plasmodium species that infect humans. Importantly, they allow more parasite clearance than any other anti-malarial drug (parasite numbers can be reduced by a factor of 105 per asexual cycle, compared with 102-103 with other anti-malarial drugs). When combined with efficacious anti-malarial with slower elimination rates, such as lumefantrine, shorter courses of treatment (three days) become effective.

The combination of artemether (an artemisinin derivative) and lumefantrine in a 1:6 ratio was the first fixed-dose ACT to meet the WHO’s prequalification criteria for efficacy, safety and quality. Artemether-lumefantrine (AL), as Coartem?, now comprises nearly 75% of the 100 million or so ACT treatments used each year. Coartem? was approved by Swiss medic in 1999 and was recently approved by the USA FDA. Coartem? Dispersible was approved by Swiss medic in December 2008. More than 40 malaria-endemic countries in sub-Saharan Africa have rapidly scaled up malaria prevention and treatment and now recommend the use of ACT as first-line treatment for uncomplicated falciparum malaria. Both artemether and lumefantrine are blood schizonticides with complementary pharmacokinetics and dissimilar modes of action, and hence provide synergistic anti-malarial activity. Artemether is rapidly eliminated from plasma with a half-life of two to three hours, whereas lumefantrine is eliminated more slowly with a half-life of three to six days and provides a high long-term cure rate after a short treatment course\(^\text{16}\). The combination thus provides rapid clearance of parasitemia and most malaria-related symptoms, coupled with prevention of recrudescence.

AL tablets have been included on the WHO model list of Essential Medicines since March 2002 and on the first WHO Model List of Essential Medicines for Children since October 2007.

The six-dose AL regimen is currently the approved treatment regimen for acute uncomplicated P. falciparum malaria in adults and paediatric patients with a body weight $\geq 5$ kg, irrespective of the immune status of the patients to P. falciparum and of the local multidrug resistance situation, in the majority of the 83 countries in Africa, Asia, Europe and Latin America where the drug is registered.

To date, no resistance to artemisinin or artemisinin derivatives has been reported, although some decrease in sensitivity in vitro has been detected in China and Viet Nam. If used alone, the artemisinins will cure falciparum malaria in 7 days, but studies have shown that in combination with certain synthetic drugs they produce high cure rates in less than 3 days with higher adherence to treatment.

Yobe state was created on 27th August, 1991 out of the Borno State, with a total Population of 2,711,592 (projected). Rural Population: 2,169,274 (80%) Urban; 542,318 (20%) and age Structure of Children $\leq$5years; 542,318 (20%), Pregnant women; 135,580 (5%). Yobe state has? 542 Patent Medicine Stores, Maternal Mortality Rate of 1,546/100,000, Infant Mortality Rate of 90/1,000 and Fertility Rate of 5.6.

Infections with malaria parasites pose a serious threat to the survival of young, semi-immune children in Africa. The rapid progression to severe complications and death following the onset of fever in under five children is a very common occurrence. For these reasons the prompt and presumptive treatment of fevers in under five children living in malaria endemic areas of Africa with effective anti-malarials is a cornerstone of current Roll Back Malaria control efforts.

Until recently this strategic approach was failing across most of sub-Saharan Africa (SSA) because inexpensive, albeit widely available, monotherapies used to treat malaria were ineffective. The continued use of failing drugs was one of the proposed drivers for rising malaria mortality in SSA during the 1990’s. The year 2004 marked a watershed moment for international recommendations for malaria treatment in SSA and several countries adopted a change from failing monotherapy to artemisinin-based combination therapy (ACT). Approximately 40 SSA countries including Nigeria have since adopted ACT as their recommended first line therapy for uncomplicated malaria.

**Objective:** The aim of this study is to examine the pattern of fever reportage and the outcome of malaria treatment two days after taking coartem among Children less than five years in Yobe state.

**Materials and Method**

The study was a cross sectional case data reviews conducted between August to December 2010 among private Health Facilities (HF) and Patent Medicine Vendors (PMVs) that were supplied with coartem on fortnightly basis by Society for Family Health in Yobe state and data were retrieved during each supply circle.

A total of 12 Private Health Facilities and 223 Patent Medicine Vendors participated in the programme. Each HF was given a ledger that contain questions which will be ask before dispensing the drug? to the client and thereafter the client is been ask to return...
two days after taking the drug. The ledger contain the following information sections; age, sex, fever reportage within 24hrs, did client improve after taking the drug? Condition remains same? Worse? Or the client did not return?

Focus group discussion was also conducted with mothers/caregivers to find out from their own part, the outcomes of the treatment. Mothers were randomly selected from the record of the health facility based on their history of visit. A total of 12 FGD sessions were conducted among 120 mothers/caregivers. The quantitative data from the ledger were collated and analyzed using SPSS version 16.0. Data was presented using frequencies and percentages, while the data from the FGDs was transcribed, translated and analyzed for report writing.

Result

A total of 12,650 children less than five years that were treated for malaria with coartem (ACT) in 235 facilities in Yobe state (12 Private Health Facilities/Clinics and 223 PMVs) were studied from August to December 2010. The results showed 28% (3,572) of the children are within the age range of 6 to 11 months old, while 23% (2,895) are between 12-23 months old, 13% (1,674) between 24-35 months old, 17% (2,143) are within the age range of 36-47 months, and 19% (2,366) are within? the age range of 48-59 months old, as seen in figure 1. 53% (6,696) of the total client population are male while 47% (5,954) are females. 23% of the female population are within the age range of 6-11 months old, while 2,196 which represent 33% of the male are also within the age range of 6-11 months old. 25% of the female are within the age range of 48-59 months old and the male population in that age range is 13% as seen in figure 2.

A total of 12 FGDs were conducted in the state, four per zone and 120 mothers participated i.e. 10 mothers per group session. Majority of the mothers here belong to the age range of 25-34 years and secondary school is the highest educational qualification attained by the mothers/caregivers.

Only 24% (3,036) of the children were taking to the health facility within 24hrs of the onset of fever. Among the children taking to the HF within 24hrs of the onset of fever, 56% (1,700) are within the age range of 6-11 months, 22% (654) 12-23 months old, 14% (415) 24-35 months and 9% (267) 36-47 month reported to the facility within 24hrs of the onset of fever. However, in the age range of 48-59 months no child was taking to the health facility within 24hrs of the onset of fever as shown in figure 4. Figure 5 shows outcomes of malaria treatment after two days of instituting treatment; 36% (4,516) have return to the health facility with improved condition 2 days after taking coartem while 64% (8,100) did not return to the health facilities after the treatment, 0.25% (31) had the same condition after treatment and 0.04% (3) had their condition worsen.

Significant difference at P<0.05 was observed between those that did not return 2 days after treatment and those that return which also shows positive correlation of 2.235 between the two groups, likewise there is no significant difference at P<0.05 within the age ranges of the improved ones but a significant difference was observed at P<0.05 within the age ranges of the patient that did not return. Among the patient that return with improved condition 21% (944) are between the ages of 6-11 months, 22% (974) 12-23 months, 23% (1053) 24-35 months, 20% (908) 36-47 months, and 14% (637) 48-59 months old as seen in figure 6.

The FGD results shows that mothers find it difficult to return back to the health facilities after receiving treatment for their children especially if the child condition has improved. 65% of the mothers says it is a waste of time since the child?s condition has improved, while 10% says they were not informed by the service providers to return when receiving the treatment. While 8% cited distance between the health Facility and their houses, 5% says they don?t want to come back because they don?t have the balance to pay the health providers because they only give part payment, 12% says their husbands will not agree since the child?s condition has improved what is the need? When asked how effective is coartem in treatment of child malaria? 98% says it is very effective, one of the participants even said: ?the moment you give your child the first dose you will see him/her recovering, atimes you don?t have to complet the dose because the child will be okay?.

Discussion

This study document the outcomes of Malaria Treatment with coartem among Children under five years in Yobe state, the result shows that among children under five years that were treated with coartem majority are not been brought back to the health facility to verify the status of the treatment if it has improve, worsen or the condition still remain the same. Children from 6-12 months old are the ones commonly brought to the Health Facilities when compared to other age groups. Likewise the rate at which children with fever are brought to health facility
from the onset of fever to the first 24hrs is more common among children in the age range 6-12 months. This study also found that children treated with coartem quickly recover from the fever in less than 3 days which correspond to study conducted by WHO 2001 where high cure rates in less than 3 days with higher adherence to treatment was obtain among children under five years of age.

This research also found that mothers find it difficult to return back to health facilities after treatment particularly when the condition of their children has improved this can be attributed to either ignorance on the part of the mother, poor counseling skills of the service provider or the poor health seeking behaviors commonly found among people in Nigeria particularly northern Nigeria. It is therefore pertinent to note that outcomes of treatment with coartem show a promising future and cure for malaria because of its immediate action when taken.

**Conclusion**

In conclusion there is the need for proper counseling of service providers and general public on the use of coartem for malaria treatment in other not to develop resistance and mothers/caregivers should be counseled properly by health care/service providers on the significance or importance of reporting fever at its onset and returning to the health facility mid way into the treatment to be sure that the treatment is impacting positively on the fever. Mothers/caregivers should also be caution on the need of adherence to drugs in other to avoid drugs resistance in future.

**Acknowledgment**

We are grateful to all private health facilities in Yobe state for their support and contribution, we also send our sincere appreciation to RBM Focal Persons in Potiskum Baba Yusuf, Bade Abubakar Wagani and Nguru LGAs. We are also grateful to Jafar Abdullahi our MVO for his support and Patience, Maureen Makama, Baba Mai Lutti, Kucheli Wudiri and Rabiat Hassan for reading and correcting the questionnaire use in the study, and to all mothers that participate during the FGDs we say thank you.

**References**

4. Nigeria Demographic and Health Survey (2003 NDHS), which was conducted by the National Population Commission Abuja Nigeria (http://dec.usaid.gov/index.cfm?_Citation&rec_no=155 131)


Illustrations

Illustration 1

Figure 1: Age Range of the U5 Children
Illustration 2

Figure 2 age range of Mothers/caregivers

![AGE RANGES OF MOTHERS](image)
Illustration 3

Figure 3 Sex distributions of U5 children
Illustration 4

Figure 4: Reporting to HF within 24hrs from onset of fever
Illustration 5

Figure 5: Outcomes after 2 days of instituting treatment with Coartem
Illustration 6

Figure 6: Number of Patient with Improved condition and those that did not return two days after instituting treatment
Disclaimer

This article has been downloaded from WebmedCentral. With our unique author driven post publication peer review, contents posted on this web portal do not undergo any prepublication peer or editorial review. It is completely the responsibility of the authors to ensure not only scientific and ethical standards of the manuscript but also its grammatical accuracy. Authors must ensure that they obtain all the necessary permissions before submitting any information that requires obtaining a consent or approval from a third party. Authors should also ensure not to submit any information which they do not have the copyright of or of which they have transferred the copyrights to a third party.

Contents on WebmedCentral are purely for biomedical researchers and scientists. They are not meant to cater to the needs of an individual patient. The web portal or any content(s) therein is neither designed to support, nor replace, the relationship that exists between a patient/site visitor and his/her physician. Your use of the WebmedCentral site and its contents is entirely at your own risk. We do not take any responsibility for any harm that you may suffer or inflict on a third person by following the contents of this website.