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Malaria Control in Nigeria

Chukwuocha UM*

Department of Public Health Technology, Federal University of Technology, Owerri, Nigeria

Abstract

Malaria is responsible for about 500 million cases and one million deaths each year. In Nigeria, it is highly endemic particularly affecting young children and pregnant mothers. Almost all the reported cases are caused by *P. falciparum* but most are unconfirmed. The National Malaria Control Program (NMCP) distributed about 17 million ITNs during 2005-2007, enough to cover only 23% of the population. Also, 4.5 million courses of ACT was delivered in 2006 and 9 million in 2007, far below total requirements. In April 2000, the Roll Back Malaria (RBM) Initiative was launched in Abuja with the aim of reducing halving the morbidity and mortality of malaria in Nigeria by end of 2005 through case management, promotion of Intermittent Preventive Treatment (IPT), and promotion of the use of ITNs/vector management. Furthermore, one of the problems encountered in malaria control is the issue of drug resistance of Chloroquine, and subsequently Sulphadoxine-Pyrimethamine (SP) which are affordable and easy to administer. Most treatments are also self administered. Development of effective malaria vaccine will certainly bring about decline of malaria cases in the country and elsewhere. Mosquitocidal fungiciding, proper delivery and use of ITNs and ACTs, and malaria sensitization campaigns in the rural – endemic areas will help in the effective control of malaria in Nigeria.

Keywords: Malaria; Nigeria; Morbidity; Mortality; Problems; Prospects; Control

Introduction

Malaria is highly endemic in Nigeria [1,2] where it accounts for 60% outpatient visits to health facilities, 30% childhood death, and 11% of maternal death (4,500 die yearly) [2]. The financial loss due to malaria annually is estimated to be about 132 billion naira in form of treatment cost, prevention, loss of man-hours etc. [2].

The National Malaria Control Program (NMCP) delivered about 17 million ITNs during 2005-2007 (6.6 million Long Lasting Insecticidal Nets), enough to cover only 23% of the population at risk [3]. The programme delivered 4.5 million single dose packages of ACT in 2006 and 9 million in 2007, far below total requirements. Funding for malaria control was reported to have increased from US$17 million in 2005 to US$60 million in 2007, provided by the government, the Global fund and the World Bank. This is unlikely to be sufficient to reach national targets for prevention and cure [3].

Most malaria deaths occur at home, without confirmation of the diagnosis. The reality is that in the poorest, rural areas, where malaria takes its highest toll, it is difficult to obtain accurate data and to derive meaningful malaria statistics. During their illness, many patients struggle, often unsuccessfully to access basic health care [1,4-6]. For those that succeed, the care may be of dubious quality and ineffective [1].

In response to this terrible situation, the global community is now taking steps to deliver more effective intervention throughout Africa, including drug combinations with an artemisinins derivative and anti-vector measures [7,8]. The dramatic success of these measures in a few specific areas, such as KwaZulu in South Africa [9], Eritrea [10], and the Tanzanian Island of Zanzibar [11], has inspired a new call for global eradication [4]. Achieving this ambitious goal depends on the development of new tools to treat, prevent and monitor malaria [3,4]. Furthermore, the recent availability of genome sequences for humans, Anopheles mosquitoes, and Plasmodium parasites has raised hopes of molecular diagnosis of the disease coupled with vaccine development.

Progress of Malaria Control

Since the inception of the Roll Back Malaria Initiative, malaria control in Nigeria has undergone an evolution that has resulted in the attainment of several milestones which have served to set the stage for the next phase in the implementation process: rapid scaling up of interventions.

Abuja declaration

African heads of states met in Abuja on April 25, 2000, to express commitment to the Roll Back Malaria (RBM) initiative having recognized the public health and economic burden the disease has placed on the continent as well as the barrier it constitutes to development and poverty alleviation. In addition to signing and ratifying the Convention on the Right of the Child (CRC), they appreciated the momentum offered by The Roll Back Malaria (RBM) movement to help reduce malaria burden. They pledged to implement the strategies and actions of RBM, initiate actions at regional level to ensure implementation, monitoring and management of RBM, provide resources at the country level to facilitate the realization of RBM objectives and to work with other partners in malaria endemic areas. The RBM process itself s focuses on the three major interventions which include case management, promotion of intermittent preventive treatment (IPT) and the use of insecticide treated nets (ITNs)/Vector management. These are linked to cross-cutting issues such as monitoring and evaluation, focused research and information, Education and Communication (IEC)/ Behavioral Change and Communication [1].

TDR sponsored research

Topical Disease Research (TDR) implementation research to increase access to necessary drugs, more especially anti-malarial drugs was launched in Nigeria in 2006 [12]. This focused on home management and community directed models for malaria treatment.

***Corresponding author:** Chukwuocha UM, Department of Public Health Technology, Federal University of Technology, Owerri, Nigeria, E-mail: chukwuochauchem@yahoo.com

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Insecticide treated net (ITN) distribution

Distribution of Insecticide Treated Nets has shown prospects in malaria control in Nigeria. Presently there is an upward trend in the distribution of ITNs to the local community [2]. Agencies like UNICEF and the Federal Ministry of Health are propagating the distribution of these effective and long lasting ITNs to primary health centers where its delivery to the local community level will be affected.

Artemisin combination therapy (ACT) distribution

Artemisin drug combinations have been adopted as standard treatments in Africa. In Nigeria in particular, Arthemeter lumefantrine combination has been adopted as the first line drug due to its safety and effectiveness for treatment of acute uncomplicated malaria. This drug comes in several brand names and has been subsidized and made widely available for prompt, effective and affordable treatment. This is in the hope that effective treatment will assist in reversing the apparently increasing death rates in African children [13]. The National Malaria Control Program (NMCP) delivered 4.5 million courses of ACT in 2006 and 9 million in 2007.

Environmental manipulation

Habitat elimination or modification efforts have included general programs to reduce the abundance of all mosquitoes as well as more targeted projects of "species sanitation" directed at the principal malaria vectors [14]. Environmental manipulations are part of the techniques in Environment Management to mitigate malaria and its vectors in Nigeria [15].

In some states in the country, the government has embarked on activities that reduce larval breeding sites of the vector mosquito through temporary changes to the aquatic environment in which larvae develop [16-19]. This was done in parts of southern Nigeria by spraying oil over stagnant water bodies to eliminate larval breeding [16] and also by closing up community land ponds and borrow pits that harbored stagnant water.

Problems of Malaria Control in Nigeria

Despite several efforts being put in place to control malaria in Nigeria, several setbacks have been encountered which have actually made effective and sustainable control of the diseases a mirage. These problems include

Drug resistance

In Nigeria, antimalarial drug resistance is recognized as one of the causes of treatment failure [2]. Chloroquine (CQ) and Sulphadoxine-pyrimethamine (SP) have grown resistance to the parasite and are therefore no longer considered as a first line therapeutic agent. Those of the ACTs have not been confirmed.

Drug dosage and compliance

Most cases reported as antimalaria resistance in Nigeria are related to problems associated with incorrect drug dosage and compliance [2]. A good number of malaria treatments occur at home. The majority rural dwellers lack basic education required to read and stick to instructions stipulated, thereby encouraging the irrational use of antimalarials.

Dearth of quality control of drugs

There is widespread increase in the sale of adulterated drugs across the country. Since nearly all malaria treatment occurs at home, people rely mainly on drugs sold over the counter [20]. Quality assurance of these drugs is questionable and thus contributes to treatment failure encountered in malaria.

Inadequate malaria epidemiological data

Epidemiological data concerning malaria morbidity and mortality in Nigeria is inadequate [3]. Most studies were confined to pregnant mothers and children under the age of five and mostly hospital based records. Again much is not known about malaria mortality and morbidity in rural settings.

Dearth of effective rural drug distribution mechanism

Most of the rural areas do not have access to good health care systems. Usually there are no accessible roads to the health centers, which in turn are poorly equipped and have inadequate drugs for malaria treatment [21].

Widespread presumptive treatment

Among the many clinical signs and symptoms associated with malaria, the most prominent is fever, which is often accompanied by chills, perspiration, anorexia, headaches, vomiting and malaise [22]. Residents of endemic areas are often familiar with this combination of symptoms, and frequently self-diagnose malaria based on symptoms alone [23]. They stop treatment as soon as the fever subsides without completing the dosage. This in particular constitutes a threat to mitigating malaria [24].

Incorrect diagnosis/Inadequate diagnostic equipments

High-quality parasite-based diagnosis has remained unavailable to most patients in Nigeria [25]. Maintenance of quality, effective microscopy service requires an organized health system infrastructure, including the provision of high quality supplies and reagents, the presence of satisfactory microscopes, maintenance and technical competence, an adequate workplace environment and the ability to prepare usable blood films [26]. Field microscopy, where established, often falls short of these requirements [27].

Prospects for Control

After a decade or more of neglect and underfunding, malaria is now firmly backing on political and health agendas. New alliances and funding initiatives should provide impetus to strive to achieve the Abuja targets and support the development of new tools and techniques for malaria control. These initiatives also should provide a much needed opportunity to train the next generation of researchers, technicians and operational control specialists, and should start to redress the loss in this area. Most importantly more efforts should be geared towards the final development of the malaria vaccine which holds very much promise in malaria control and its eventual elimination as discussed [1,28-30].

Malaria vaccine development

Progress towards developing malaria vaccines has accelerated in the last decade. Increased funding, greater awareness, and advances in science and in vaccine technologies have reinvigorated a field that had been constrained by the absence of a traditional market, few developers, and the technical complexity of developing any vaccine against a parasite [31-34]. It only requires more commitment and funding to give it a serious go.

Development of mosquitocidal fungi

Mosquitocidal fungi are being tested as a possible new way to tackle

the spread of malaria. Two studies have assessed the potential, in the laboratory and in the field [35-37]. These fungi can be introduced into mosquito habitats to act as predators on mosquito larva and reduce the abundance of mosquitoes in the environment.

Indoor residual spraying

Indoor Residual Spraying involves the treatment of all interior walls and ceilings with insecticides, and is particularly effective against mosquitoes, since many will rest on an indoor wall before or after feeding [38-43].

Proper delivery of ITNs and ACTs

There is a growing policy on the effective distribution of insecticide treated nets (ITNs) and Artemisin Combination Therapy (ACT) to the population at risks. The sole aim of the policy is to reduce the burden of malaria among the affected communities [44].

Conclusion

Even though concerted efforts have been made towards the control of malaria, its elimination has continued to be a mirage. So many problems have been encountered as a result of policy issues, policy formulations, management, implementation, compliance and sustatainance. However the future still holds considerable promise with new dimensions being explored which include increased research funding especially towards vaccine development, policy formulation and implementation based on evidence, increased public health and environmental education, incorporation of the communities in activities towards malaria control as well as stepping up of ongoing control programmes and possibly integrating them into primary health care activities. Malaria control in Nigeria and indeed other endemic countries will cease to be a mirage and become a reality with a little more strategic and prioritized effort. There is still hope.

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