

# FULL PRESCRIPTION

BETTER MALARIA TREATMENT FOR MORE PEOPLE, MSF'S EXPERIENCE

September 2008





Published by  
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Médecins Sans Frontières is a humanitarian aid organisation that brings emergency medical assistance to populations in distress in over 60 countries.

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Although effective tools exist to identify and treat malaria – one of the main infectious diseases responsible for high mortality, especially among children in sub-Saharan Africa – Médecins Sans Frontières' (MSF) experience is that an extremely limited number of patients have access to them. This urgently needs to change.

Addressing malaria and its far-reaching consequences is presented as a priority for many stakeholders worldwide. Both public health specialists and economists stress the importance of controlling the disease and increased attention is being given to fighting malaria, both in countries affected and among international donors. Although easily treatable, malaria continues to cause a great number of deaths and remains the most commonly diagnosed disease in many African countries. Malaria still kills a child every 30 seconds worldwide; nine out of ten of these deaths occur in sub-Saharan Africa, predominantly among young children. According to the World Health Organisation (WHO), one in every five childhood deaths is due to the effects of malaria<sup>1</sup>.

New tools and strategies such as long lasting impregnated bed nets, artemisinin-based combination therapy (ACTs) and intermittent preventive treatment for pregnant women provide more efficient prevention and care approaches to fight this public health problem. Technical guidelines have been developed, funding has increased and partnerships such as Roll Back Malaria (RBM) are looking into ways to effectively address the disease.

Yet, the reality in many countries where malaria is a main cause of death and illness is that very few people receive the effective anti-malarial treatment they need: only 3 % of children in need in African countries received ACTs<sup>2</sup>.

MSF's experience in several African countries shows that a steep increase in the number of people treated is possible without compromising the quality of care. In Chad, in 2006, MSF treated in Bongor more than 87,000 confirmed cases of malaria, almost a quarter of all malaria cases treated at the national level in 2005<sup>3</sup>. In Mali, between 2006 and 2007, the number of children who were diagnosed and treated in the health centres in the Kangaba Circle more than trebled. In the area covered by MSF in Sierra Leone<sup>4</sup>, the proportion of children receiving anti-malarial drugs in case of fever is twice the national level<sup>5</sup>.

Such results can only be achieved if certain conditions are met. There is currently a huge delay on many levels in integrating efficient strategies like those implemented by MSF to fight malaria.

The purpose of this document is to share MSF's experience in increasing access to quality malaria treatment in sub-Saharan Africa. The results obtained show that it is possible to reduce the suffering caused by malaria. National and international stakeholders need to adopt these approaches that have proven successful and demonstrate the will to make the tools available for patients who need them.

<sup>1</sup> 10 facts on malaria, WHO. <http://www.who.int/features/factfiles/malaria/en/index.html>

<sup>2</sup> WHO 2008 malaria report.

<sup>3</sup> Funding proposal from Chad to the Global Fund, Round 7. [http://www.theglobalfund.org/search/docs/7TCDM\\_1488\\_0\\_fullF.pdf](http://www.theglobalfund.org/search/docs/7TCDM_1488_0_fullF.pdf)

<sup>4</sup> Data from preliminary report on "Health seeking behaviour in MSF catchments area, Bo, Sierra Leone", MSF, 2008.

<sup>5</sup> "Coverage of malaria interventions in eight global fund districts in Sierra Leone", Ministry of Health and Sanitation, Sierra Leone, March 2007.

## NEW TOOLS FOR AN OLD PROBLEM, PRESENT CHALLENGES



New tools are now available that change the way malaria can be addressed, but in practice, their use and availability at the patient level is still very limited.

Today, approximately 40% of the world's population, mostly those living in the poorest countries, is at risk of contracting malaria. The disease causes more than 300 million acute illnesses and at least one million deaths annually throughout the tropical and sub-tropical regions of the world. Those who survive an episode of severe malaria may suffer from learning impairments or brain damage. Pregnant women and their unborn children are particularly vulnerable; malaria is a major cause of perinatal mortality, low birth weight and maternal anaemia<sup>6</sup>.

Although malaria has been affecting populations of Africa for a very long time, recent innovations and increased funding now allow health actors to approach the disease in a radically different way.

A lot of attention is being given to scale up prevention activities. Long lasting insecticide treated bed nets are more widely available and distributed, intermittent preventive treatment for pregnant women is actively encouraged and indoor residual spraying has received renewed interest. But beyond these indispensable efforts, treatment of patients who become infected and ill remains crucial in the fight against the disease.

Some important changes have taken place in recent years and influenced intervention and care for malaria patients: the recognition of widespread resistance to chloroquine and other antimalarial drugs which had been used extensively for treatment in the last decades; the subsequent change of national treatment protocols to efficient but more expensive artemisinin-based combinations; and the availability of rapid tests to diagnose malaria (RDTs). These tests allow to stop considering and treating any fever as malaria. RDTs need only a drop of blood and 15 minutes before the results are known. In the past, the only method to confirm diagnosis was microscopy which requires a number of conditions that makes its use in many settings highly unpractical.

In practice, access to these new tools remains very limited for patients in a number of sub-Saharan countries. This is certainly the case in three countries where MSF implements programmes specifically targeting malaria: Chad, Mali and Sierra Leone.

This reality can be explained by different factors: weak distribution systems, lack of health structures, and a lack of qualified staff, to name a few. Managing all these aspects efficiently constitutes a challenge for any country, regardless of the disease. Ensuring the adequate quantity of medicines at national level is certainly one of them.

Most sub-Saharan countries have opted for ACTs and more money is available, mainly through new international funding sources<sup>7</sup>, for their procurement. This funding assistance is particularly welcome, as ACTs are more expensive than the previously used chloroquine. After initial delays in many countries, ACTs are starting to reach district and local health structures, but whether the quantities to be purchased correspond to the actual medical needs of the people remains a major question. Three main reasons for concern have emerged from MSF's experience:

<sup>6</sup> What is Malaria? RBM website [http://www.rbm.who.int/cmc\\_upload/0/000/015/372/RBMInfosheet\\_1.htm](http://www.rbm.who.int/cmc_upload/0/000/015/372/RBMInfosheet_1.htm)

<sup>7</sup> Such as the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria (GFATM) and the US President's Malaria Initiative (PMI)

## 1. Insufficient availability of ACTs

ACTs are still far from available in all countries where they are needed. In Chad, for instance, ACTs are still only provided by non governmental organisations and UNICEF. In other settings, ACTs are only available for certain groups of the population: funding for ACTs in the Democratic Republic of Congo only covers provision of treatment for children. In Sierra Leone, the main initiatives that plan to procure malaria medicines focus on children under five. But even for this group for which malaria has the most severe impact, quantities anticipated by the key players are far from what is needed.

The planned amount of drugs to be supplied in Sierra Leone through funding from the Global Fund during the first year will only allow to treat one third of all children for one episode of malaria a year – when it is estimated that, on average, each child suffers four bouts of the disease every year<sup>8</sup>. If children were brought to the public health structures each time they were sick with malaria, running out of stock would rapidly be unavoidable. ACTs for treatment of malaria in pregnant women do not seem to be taken into account at all.

## 2. Financial obstacles and use of public services by the population

Quantities of drugs supplied are often calculated based on the actual use of services rather than on real morbidity figures. But the use of public services is usually extremely low and does not correspond to the real medical needs of the population.

Limited use of health services is a general problem in many poor sub-Saharan communities. The authorities in Sierra Leone found that only 12% of children suspected of having malaria were using health services<sup>9</sup> within the 24 hours of the onset of fever<sup>10</sup>.

In Mali, patients on average visit health services fewer than 0.3 times per year; financial obstacles often prevent them from seeking care. Part of the stocks of ACTs may not be used before their expiry dates<sup>11</sup>, not because people are not sick, but because the existing clinics are little used by the population.

Providing treatments without addressing these issues is not effective. If the internationally agreed upon objective to treat promptly 80% of people with malaria<sup>12</sup> is to be met, the lack of use of services need to be urgently addressed.

## 3. Quality diagnosis and better identification of malaria burden

The number of malaria cases in these countries is only a general estimation. Currently, the vast majority of diagnoses are made based on symptoms of fever at home or in health structures. Biological diagnosis, such as microscopy, often remains out of reach in many poor settings as it requires special equipment and trained staff which are often not available. This lack of precision in the diagnosis means that patients are not always treated for the illness from which they actually suffer and that drugs are not used rationally. This situation can be changed: user-friendly, effective and efficient rapid diagnostic tests (RDTs) are now available which allow a quick confirmation of diagnosis. They also offer the potential to reach remote areas through a community approach. RDTs are rarely considered, however. Although rapid tests are increasingly promoted, their systematic use is lagging behind. International recommendations continue to advise treating children under five in high prevalence area on the basis of symptoms alone<sup>13</sup>.

Systematic distribution of ACTs based on symptoms only at the community level, as is being proposed in Sierra Leone<sup>14</sup> should be further discussed. Such an approach, besides promoting inefficient use of drugs, may indeed lead to a faster development of resistance, as we saw with chloroquine.

Increased use of RDTs needs to be encouraged and recommendations for children under five reviewed.

<sup>8</sup> Funding proposal from Sierra Leone to the Global Fund, Round 7 [http://www.theglobalfund.org/search/docs/7SLEM\\_1573\\_0\\_full.pdf](http://www.theglobalfund.org/search/docs/7SLEM_1573_0_full.pdf)

<sup>9</sup> Public and private

<sup>10</sup> "Coverage of malaria interventions in eight Global Fund districts in Sierra Leone", Ministry of Health and Sanitation, Sierra Leone, March 2007.

<sup>11</sup> Oral source in the country.

<sup>12</sup> The Abuja Declaration and Action Plan [http://www.rbm.who.int/docs/abuja\\_declaration.pdf](http://www.rbm.who.int/docs/abuja_declaration.pdf)

<sup>13</sup> WHO guidelines for the treatment of malaria, 2006.

<sup>14</sup> "National strategic plan to scale up community based interventions for malaria control in Sierra Leone", 2008-2012, Sierra Leone, Ministry of Health and Sanitation, 2008.

## Learning from our experience in Chad, Sierra Leone and Mali

MSF has been pushing for the use of the new tools to diagnose and treat malaria and has integrated them in its own projects to improve patients' health.

Although preventive treatment for pregnant women and mosquito net distribution are part of most of MSF's malaria intervention, the main focus remains proper medical care for patients (see box on MSF's malaria projects). In 2007, close to 3 million rapid diagnostic tests were procured through MSF projects and 1.3 million patients were treated for confirmed malaria. Fever is one of the main reasons people come to our health structures, and malaria is one of the top three diseases diagnosed, based on RDTs, in most sub-Saharan countries where we work.

MSF developed projects focusing specifically on malaria care in Chad, Mali and Sierra Leone. The aim was to decrease mortality due to malaria and ensure that more patients in need received treatment by using the new medical tools available.

In all three countries, rapid tests and ACTs were systematically procured, staff trained on their use and the community informed about the disease and its treatment. MSF's policy is to systematically perform a rapid test on patients with a "clinical suspicion of malaria", including children under five years of age<sup>15</sup>.

In all three projects, strategies were implemented to reduce patients' main barriers to access to malaria care.

Two main barriers were addressed:

- The financial barriers to care at point of use: by subsidising the cost of care instead of the users (full or partial subsidy depending on the projects)
- The geographical barriers: by decentralising free care so it is closer to the patients for whom geographical barriers were impeding the access to basic health services. This was done by training members of the community to identify and treat simple malaria cases.

### MSF's malaria projects: more than curative care

As for any other similar public health issue, addressing a communicable disease such as malaria requires implementing a series of approaches and strategies:

- information on and education of the communities affected,
- training, supervision and motivation of health staff,
- implementation of the preventive measures available: distribution of bed nets, increased education and communication efforts, intermittent preventive treatment, and indoor residual spraying,
- ensuring quality of service and providing a patient-friendly environment in the health structure.

All these important issues are considered in MSF's projects and some of them, if not handled by other actors, are implemented directly. They are not detailed in this report.

<sup>15</sup> For children under five, fever or history of fever in the preceding 48 hours is used as a selection criteria. For anyone above the age of five, "fever with exclusion of other infections that cause fever" is used as selection criteria as many adults are asymptomatic carriers.

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# CHAD

## Context

Malaria is hyper endemic in the southern part of the country with a high transmission period between June/July and December/January, depending on the local rainfall pattern. The northern part of Chad has a desert climate with nearly no malaria transmission.

For the last ten years, malaria has been the first cause of morbidity and mortality among children under five. It is the main reason people visit public health centres (22.4% of all notified problems)<sup>16</sup>. Since 2005, the treatment protocol has been changed to using ACT at the national level (artesunate/amodiaquine as first line treatment). Nevertheless, chloroquine remains the first line treatment in most of the health facilities throughout the country. ACTs have only been introduced in a few districts supported by international organisations such as MSF and UNICEF<sup>17</sup>.

<sup>16</sup> "National strategic plan to fight malaria in Chad, 2007-2011", Ministry of Health, draft, May 2007.

<sup>17</sup> Global Fund proposal, page 17; see [http://www.theglobalfund.org/search/docs/7TCDM\\_1488\\_0\\_full.pdf](http://www.theglobalfund.org/search/docs/7TCDM_1488_0_full.pdf)

## MSF intervention

In 2002, MSF carried out a resistance study in the district of Bongor, which is one of the five districts of Mayo-Kebbi, in the south of the country. The study showed high levels of resistance to chloroquine 26.3 %, and 21.4 % to sulfadoxine-pyrimethamine (which was used as second line treatment)<sup>18</sup>. Based on these results, MSF decided to support the health authorities in the district of Bongor to make the new malaria treatment available and accessible to the population.

In 2004, MSF started to support the introduction of ACTs and RDTs in 18 health centres in collaboration with the authorities. The target population was 280,000 inhabitants, 65% of them living further than 5km from the health centres.

## Strategies implemented

### Procurement of RDTs and ACTs at subsidised price

An MSF subsidy allowed charging patients a reduced price for ACTs, up to the price of chloroquine in 18 health centres. The rest of the payment system, a cost recovery scheme, remained unchanged.

Some months after the start of the implementation, MSF undertook a retrospective mortality survey in the district, in a radius of 5 kilometres from the health centres, which found high mortality rates especially for children under five<sup>19</sup>.

	Crude mortality rate (CMR)	Under 5 mortality rate (U5MR)
Number of deaths/10,000/day	1.02 [0.83-1.22]	2.96 [2.33-3.59]

The main reported cause of death was fever, with a strong suspicion of malaria. Many people had no access to health centres, mainly for financial reasons, even in the subsidised system.

The same survey also showed that the majority of the population lived in poverty, with 91 % living on less than \$US 1 per day. The average income was \$US 0.5 per person per day. As a result, the cost of a single episode of malaria was about 10 days work. Fifty percent of patients put themselves at risk of further impoverishment to pay for health care.

Although free access to health care for patients should have been implemented to increase the use of services by patients, MSF was not successful in negotiating a broader package of subsidies with the authorities. The system at the health care centres remained unchanged; MSF decided to focus on improving access to malaria care for the population living further away from health centres, specifically for children up to 14 years old, through the establishment of a malaria village workers (MVW) network.

### Decentralisation of malaria case management activities

In 2005, during the malaria season, four mobile clinics started to cover a total of 32 villages. In addition, 20 malaria village workers were trained and supplied with rapid tests and malaria drugs. People with a fever but with negative rapid diagnostic tests were referred to the nearest health centre. In 2006 the number of MVW was increased to 92, and to 104 in 2007. The use of mobile clinics was discontinued at the end of 2006.

### Free care

Community-based activities aimed specifically at treating children up to 14 were free of charge.

<sup>18</sup> "In vivo study of the therapeutic efficacy of chloroquine, sulphadoxine-pyrimethamine and amodiaquine for treatment of simple malaria caused by plasmodium falciparum in Bongor, Chad", Epicentre, April 2003. Available only in French.

<sup>19</sup> "Mortality and access to healthcare in the district of Bongor", MSF, 2005.

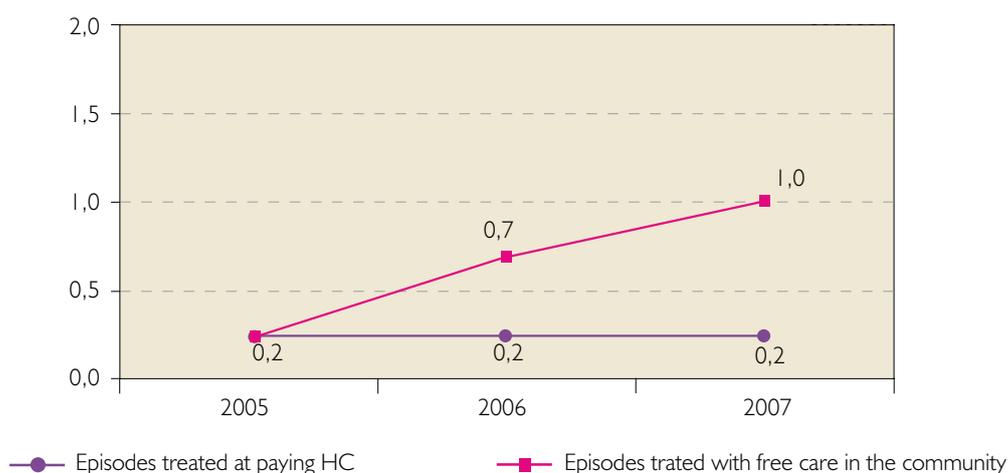
## Results

The number of patients diagnosed and treated for malaria was strikingly different in the two areas covered:

**At the health centre level (HC):** The use of health centres that charged fees remained low despite MSF subsidies for RDTs and ACTs. The number of malaria consultations was very low compared to the number of cases treated in areas with the same epidemiological pattern where MVW were present to provide free malaria care.

**For the target group of children (< 14 years old), five times more children could be treated through the free decentralised care compared to the paying system at the health centre level.**

Comparison of use of services (paying HC vs. free MVW) by patients under 14 year, originating from the area covered by the service



The overall attendance rate at the health centres remained low - maximum 0.3 new consultations per inhabitant per year - compared to the WHO reference rate of 0.6 in rural areas<sup>20</sup>.

While the project focused on making new treatments accessible to patients, the results reveal that the number of malaria cases treated in the health centres remained very low, showing that the strategy of a partial subsidy only had a limited impact on the use of these services by the population.

**In contrast, at the community level,** through the free care delivered by the MVW, the number of confirmed malaria cases treated soared from 13,268 in 2005 to 90,294 in 2007. These results reveal the population's real needs for malaria treatment and show that malaria is highly prevalent in the area. It also illustrates that MVW can efficiently diagnose and treat patients.

The high number of confirmed malaria patients among children under 14 who accessed care at the community level highlights the huge gap that exists between the health care needs of the population and the low coverage by health structures that require a financial contribution by patients.

### Impact of strategies on mortality

A mortality survey carried out in 2008 revealed that in areas close to health centres, mortality among children under five, although lower, did not decrease significantly in comparison with the 2004 results. In areas where free decentralised care through malaria village workers was deployed, however, results show a significant lower mortality in children under five compared to the data gathered in 2004.

	2004	2008
Area with HCs (5km radius)	2.96 [2.33-3.59]	2.33 [1.53-3.14]
In areas with MVW		1.54 [0.83-2.25]

<sup>20</sup> "Health Information System", AEDES.





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# SIERRA LEONE

## Context

In Sierra Leone, malaria remains one of the most serious public health problems. Transmission takes place throughout the year, with peaks at the beginning and at the end of the rainy season (from May to November). Plasmodium Falciparum is responsible for more than 90% of the infections. The entire population is at risk of developing the disease. As in other countries affected, the most vulnerable groups include children under five years and pregnant women. In the under five age group, malaria is responsible for 47% of outpatient morbidity and 37.6% of all hospital admissions, with a case fatality rate of 17.6%. Mortality attributed to malaria is 38.3% (for under fives) and 25.4% (all ages)<sup>21</sup>.

MSF retrospective mortality studies carried out in 2005 and 2006 found high mortality rates with the main causes of death reported to be malaria. Surveys also revealed that 97% of the population in the districts surveyed lived on less than \$US 1 per person per day, the average income being \$US 0.11 per person per day. The cost of health care per episode of disease was, on average, 25 days of work for the people using the national system of cost recovery<sup>22</sup>.

Following resistance studies carried out at a national level in 2003, national protocol was changed to adopt artemisinin based combination therapy using a combination of artesunate and amodiaquine (AS+AQ) as the drug of choice for the treatment of uncomplicated malaria. However, at the time of writing this report, ACTs are still available in limited quantities in the country. In addition, the planned payment exemption for health care for vulnerable groups is not being implemented on the ground.

<sup>21</sup> Proposal from Sierra Leone to the Global Fund, Round 7. [http://www.theglobalfund.org/search/docs/7SLEM\\_1573\\_0\\_full.pdf](http://www.theglobalfund.org/search/docs/7SLEM_1573_0_full.pdf)

<sup>22</sup> "Access to health care in post war Sierra Leone", MSF, January 2006. "Nutritional and retrospective mortality survey, Bo district, Sierra Leone", MSF, September 2006.

## MSF intervention

MSF has been working in Sierra Leone since 1986 in camps for internally displaced persons, and supporting Bo provincial hospital since August 1995. The structure was overwhelmed by the 100,000 people who had moved to Bo to escape conflict in the area. Following the renewed fighting in neighbouring Liberia, refugees arrived during 2002 and replaced the internally displaced population within the camps as Sierra Leoneans returned to their areas of origin. Services were delivered for free to the refugee population while the host population had to pay a flat fee. In 2003, MSF opened a private free care hospital as it had become nearly impossible to obtain quality care in the public system. The target population was 142,273 including 45,550 refugees.

At the end of 2004, care became free for the host population, and RDTs and ACTs were introduced in the five MSF-supported health centres in Bo and in the MSF hospital. Following the alarming results of mortality surveys in 2005 and 2006, MSF decided to step up efforts to fight malaria.

## Strategies implemented for malaria care

### Extension of free care

At the end of 2004, user fees for the host population were removed in the five health centres supported by MSF. Costs of services were directly subsidised by MSF, which paid instead of the patients.

In 2006, MSF support was extended to 30 peripheral health units serving smaller communities further away from the health centres. Health staff was trained and drugs supplied to ensure that diagnosis and treatment for malaria and the main children's diseases were given for free to patients.

### Community based activities to overcome geographical barriers

At the end of 2007, in addition to the support provided to the health structures, 107 malaria village workers were selected and trained in villages where people struggled to reach health care centres (further than three kilometres away from the formal structures). The village workers had no specific health background but received training to perform RDTs. They tested children under five with fever and pregnant women, and dispensed free ACTs to patients who needed it and explained how to take the treatment. Patients with negative RDT results and with severe malaria are referred to the health centres.

## Results

Results of the strategies deployed show that many more people used health centres supported by MSF than the national average: utilisation rates in MSF areas reached 1.21 new cases per person in 2007, compared to 0.5 at the national level<sup>23</sup>.

### A significant increase in the use of services after the abolition of fees for the host population

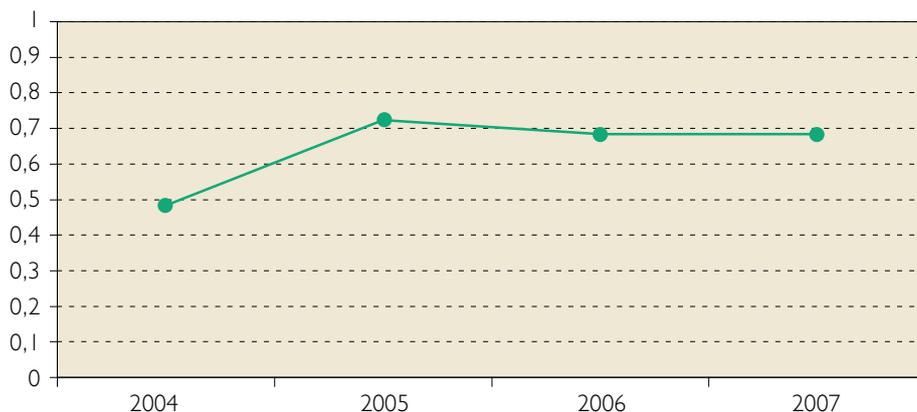
A radical increase in the use of existing health structures was seen when the low flat fee charged to patients was removed at the end of 2004. Following the introduction of free care, the number of cases diagnosed and treated doubled compared to the previous year: 5,535 in June 2004 to 10,451 in June 2005. This trend was confirmed in the following months.

Among the host population who previously had to pay, the number of malaria cases in children treated in the first half of 2005 was 10 times higher compared to the same period in 2004. This trend stabilised at the same level in the succeeding years.

<sup>23</sup> Mentioned in the social security project between NASSIT and the International Labour Organisation.

## High number of patients diagnosed and treated for malaria

Evolution of malaria cases treated/inhab/year in Bo district



In 2004 close to 75,000 patients (host population and refugees) were treated for malaria. More than 110,000 confirmed malaria cases were treated in 2005 and the following years.

### Impact of the intervention on mortality rates in the area

A survey conducted in September 2007 showed a marked decrease in mortality rates: from 1.7 deaths per 10,000 population per day in 2005<sup>24</sup> – which is above the alert threshold of 1/10,000/day – to 0.7 in 2007<sup>25</sup>. The mortality rates for children under five decreased from 3.5 in 2005 to 1.3 in 2007<sup>26</sup>. This positive trend must be confirmed in 2008, although encouraging outcomes are already being seen.

<sup>24</sup> CI 95% [1.4-2.0]

<sup>25</sup> CI 95% [0.6-0.9]

<sup>26</sup> CI 95% [2.6-4.4] in 2005; [0.9-1.7] in 2007.





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# MALI

## Context

Even though the entire population of Mali is affected by malaria, the disease is endemic particularly in the central and southern regions and potentially epidemic in northern areas. Malaria is characterised by an intense transmission period during the rainy season, the length of which varies depending on each zone. It constitutes the main cause of mortality and morbidity in Mali, especially in children under the age of five. On average, children under five suffer from two episodes of malaria per year, while those over five suffer from one episode of malaria per year<sup>27</sup>. More than 30% of consultations in health structures are linked to malaria; for 2005 alone, more than 960,000 cases of malaria were recorded in public health centres<sup>28</sup>. This number illustrates only a small part of the reality, since the relative number of patients visiting such centres is exceedingly low. Rather, the majority of presumed malaria cases are taken care of by people using available means in their homes or at the community level<sup>29</sup>.

Confronted with increased resistance to chloroquine, the Government of Mali in 2005 decided to abandon chloroquine in favour of ACTs. The artesunate/amodiaquine (AS+AQ) combination has been chosen for treating uncomplicated cases of malaria following a laboratory confirmation or after a RDT.

Today, availability and accessibility of the new treatments remain a big challenge at the national level. The authorities focus on the availability of ACTs for children under the age of five; the national policy states that RDTs and treatments should be administered at no cost for this group. However, in practice, important constraints to access for patients remain. There is a risk that part of the available stocks of ACTs will remain unused because access barriers for the patients haven't been properly addressed.

<sup>27</sup> "Acceleration Plan for Malaria Control Activities", Ministry of Health, Republic of Mali, April 2007.

<sup>28</sup> Ibidem.

<sup>29</sup> Information from the "National Malaria Control Policy", Ministry of Health, 2006.

## MSF intervention and results<sup>30</sup>

Although Mali is a stable country, MSF, as a humanitarian medical NGO, is still present. The high mortality rates – 1.9 deaths in 10,000 persons per day<sup>31</sup> for children under the age of five – mainly due to malaria, according to a survey done in the Circle of Bougouni in 2005, as well as the lack of effective treatments, led MSF to decide to continue a health care project in Mali<sup>32</sup>.

After several studies revealed high levels of resistance to anti-malaria drugs, MSF decided to intervene to reduce mortality and morbidity linked to malaria. The project set up in the Circle of Kangaba aims to support the Malian health authorities in implementing their new malaria control programme.

MSF support in the Circle of Kangaba started in August 2005 with the introduction of RDTs and ACTs in seven community health centres and in the referral health centre within the Circle<sup>33</sup>. These centres serve an area where the total population is more than 70,000.

## Strategies implemented

### Subsidise diagnosis and treatment in a system of cost recovery:

From August 2005 until November 2006, RDTs and ACTs were subsidised by MSF to increase patients' access: RDTs and ACTs were free of charge for children under five and at a "low cost" (the price of chloroquine) for patients older than five. Fees for consultations and for treatment of other diseases remained in place.

After one and a half years of intervention, results were mixed:

Despite the observed increases, attendance rates remained low in comparison to the WHO reference rate, which is 0.6 new curative consultations per inhabitant per year in rural areas<sup>34</sup>. Similarly, for malaria, where the average morbidity rate is one or two episodes per person per year (depending on the age group)<sup>35</sup>, there were significant limitations in the coverage of needs.

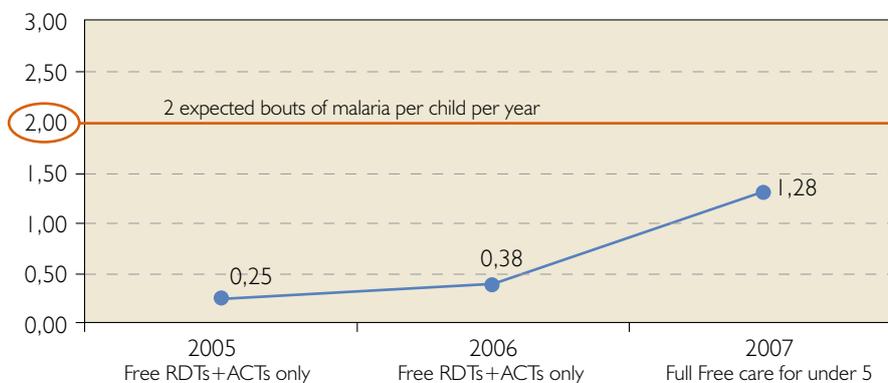
**Providing only a free malaria test and malaria treatment when patients still had to pay for other care had a very limited effect on use of the health structures by the patients.**

### Removal and reduction of the financial barrier:

Since December 2006, in a bid to further improve access to RDTs and ACTs, free care for consultation for all diseases was implemented for children under five years of age. In addition, free care for episodes of fever in pregnant women and a low flat fee for patients over five with fever were implemented.

The strategy of free care for children under five and pregnant women with fever had a clear and rapid impact on attendance in the health structures and significantly improved coverage of health needs, specifically for malaria.

New malaria consultations/child/year with free care for all children under 5



<sup>30</sup> "Improving access to effective malaria treatment in Mali – A positive experience in lowering the financial barriers for patients in the Kangaba Circle". MSF, April 2008. Available on [www.accesstohealthcare.msf.be](http://www.accesstohealthcare.msf.be)

<sup>31</sup> CI 95% [1.2-2.6]

<sup>32</sup> "Access to Primary Health Care in Mali, results of an epidemiological survey, Bougouni Circle, region of Sikasso". Médecins Sans Frontières, June 2005. Available only in french.

<sup>33</sup> In January 2008, this support was extended to an 8<sup>th</sup> CSCOM.

<sup>34</sup> "Health Information System", AEDES.

<sup>35</sup> "Acceleration Plan for Malaria Control Activities", Ministry of Health, Republic of Mali, April 2007.

### Community based activities:

Considering the isolation and distance of some villages from health centres, specifically during the rainy season, a network of malaria village workers was established to bring free malaria care closer to the isolated population.

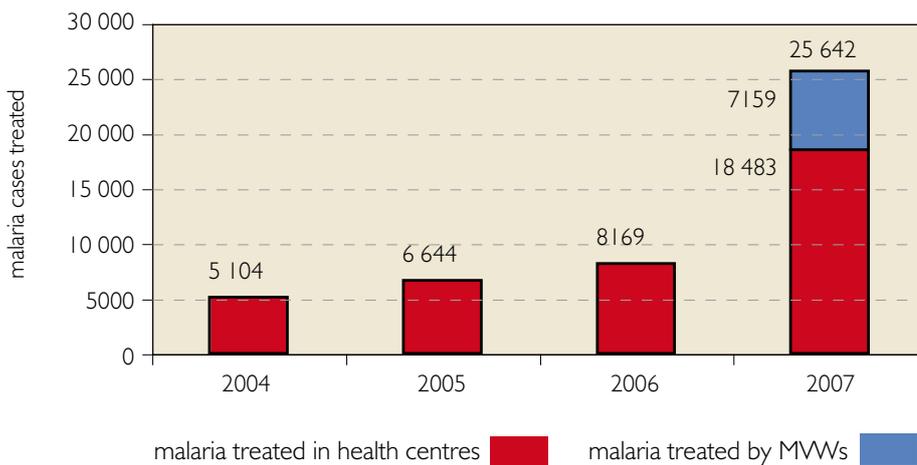
Malaria village workers from these isolated villages were selected and trained to take charge, for free, of simple malaria cases in children under 10. Negative RDT cases and severe cases identified were referred to the nearest health centre or hospital.

Community based activities through malaria village workers increased coverage and access to prompt treatment for children affected by malaria. The experience also showed that the use of RDTs by malaria village workers, when trained and supervised, is possible and efficient.

All these strategies resulted in a significant increase of patients treated:

- Implementation of free care for children and pregnant women with fever resulted in doubling consultations in the health centres,
- Availability of free malaria diagnostics and treatment at the community level extended the coverage of the specifically vulnerable group of children.

Evolution of the number of malaria cases treated between 2004 and 2007



### Impact of strategies on mortality

A population survey to measure the impact of strategies on population mortality was carried out in July /August 2008. Analysis of these results is ongoing.

# Efficient strategies for increasing people's access to malaria care

# 4

In the past, many projects failed to reach a number of patients. Although drugs were provided and some of the other costs subsidised, only a limited portion of the population benefited. The most vulnerable were often excluded. The evaluation of the different approaches implemented by MSF in Chad, Mali and Sierra Leone has allowed us to draw important conclusions about the most efficient strategies to ensure that patients affected by malaria access the treatment they need.

## 1. Removing the financial barrier: an indispensable condition for increasing patients' use of health services and access to malaria care

MSF's experience shows that having ACTs available in health centres, even at a low price, is not enough. In Chad, no significant increase in attendance was observed in the structures where only the drugs were subsidised. In contexts where poverty is widespread, even what is considered a small financial contribution constitutes a barrier for patients seeking prompt health care. The same conclusion was drawn from our experience in Sierra Leone and in Mali; it was only when completely free care (medicines, consultations and other related costs) was introduced that the number of consultations increased drastically (table 1).

**Table 1: Evolution of malaria consultations in Mali and Chad health centres**

	Mali	Chad
Number of Health Centres (HC)	7	22
Population covered	75,000	286,000
Cost of ACT+RDT in HC	Free between 2005 and 2006, but rest of the health costs to be paid	Subsidised up to the price of Chloroquine since 2005
Global free care in HC	Yes, since 2007	No
Number of malaria cases treated in HC	6,644 in 2005 8,169 in 2006 18,483 in 2007 <b>multiplied by 2.8</b>	24,889 in 2005 26,915 in 2006 23,356 in 2007 <b>no increase</b>

The stagnation of the number of malaria cases in the health centres in Chad is even more striking when we know that thousands of children were treated for free in the community through the malaria village workers in the same area during the same period. Clearly, the need existed but it was not being addressed properly due to the unaffordable fees at the health centres that influenced people's use of services.

MSF's experience is that, in contexts where poverty is widespread and a financial contribution is required, patients tend not to use the health centres (see box on No cash no care)<sup>36</sup>. In such contexts, subsidies to the health centres will only benefit a limited number of patients; the most vulnerable patients will continue to be excluded from the care they need if the subsidies do not ensure full free care at the point of service delivery.

### No cash no care

The negative impact of user fees on access to health care in resource-poor settings has been extensively documented<sup>1</sup>. MSF's population surveys on access to health care in the Democratic Republic of Congo, Burundi, Mali, Chad, Sierra Leone, and Haiti revealed common features:

- poverty was far more serious and widespread in rural areas than country average data suggest, with the majority of households living below the poverty line,
- approximately half of the families surveyed were prevented from visiting the nearest health facility when sick because of the cost,
- even "low fees" are an obstacle for people trying to access health care,
- for those who did receive care, the cost of a visit to a health structure represented between 5 to 30 days of work,
- drug peddlers are one of the most popular alternatives to health centres simply because they are cheaper. Thirty to 60% of households stated that price was the incentive for using them.

In the countries studied, the financial participation required by the population often had a negative impact on the quality of care: parents delaying the use of health services (up to the moment when it may be too late, while gathering the money necessary, etc.) or by influencing the prescription (cheaper drugs or incomplete course of treatment prescribed or bought to match the financial capacity of the patient).

Although exemption systems are cited as the way to avoid these problems, in reality, these systems do not work. Most of the time, they are poorly subsidised, inadequately implemented and leave health structures to rely on patients for their income. In MSF's experience, whatever the exemption system in place, unacceptable numbers remained excluded from essential care.

On the other side of the spectrum, the implementation of free care for the patients has shown to be a very effective way to increase access to health care which has a positive impact on the health of people living in poverty. In many settings, abolishing user fees allowed women to get supervised deliveries and caesarean sections, for example, and confirmed malaria cases were treated and severe cases hospitalised.

<sup>1</sup> "Equity and health sector reforms: Can low income countries escape the medical poverty trap?" M. Whitehead and al. *The Lancet*, vol 358, 2001. "Poverty and user fees for public health care in low-income countries: lessons from Uganda and Cambodia", Meesen et al., *The Lancet*, vol 1368, 2006.

<sup>36</sup> "No Cash, no Care: How "user fees" endanger health". An MSF briefing paper on financial barriers to health care. March 2008. Available on [www.accesstohealthcare.msf.be](http://www.accesstohealthcare.msf.be)

## 2. Proper diagnosis: crucial for quality care

For decades, malaria diagnostic largely relied on clinical examination and experience or the instinct of the consultant. Biological confirmation through microscopy requires trained lab technicians, proper supervision, reagents, slides, etc. which means that its availability and use on the ground is often limited.

Since 2004 MSF has been using rapid testing in many settings. Thanks to the systematic use of the test for confirmation, endemicity of malaria proved to be lower than described. It shows that the usual “decision trees” for fever management at the primary health care level were often inadequate.

The three contexts we worked in show two distinct epidemiological patterns:

In Bo, in Sierra Leone, malaria transmission is high throughout the year while in the two other contexts, malaria transmission is influenced by seasonality. The results of the RDTs performed in the different settings highlight the high proportion of non-malaria fevers that can reach up to 37% in high season.

**Average positive results of RDTs performed on suspected cases of malaria, for all age groups, in 2006**

	RDTs positivity high season	RDTs positivity low season
Sierra Leone, Bo district	65%	
Chad, Bongor district	66%	43%
Mali, Kangaba district	63%	43%

The advantages of performing a systematic biological diagnostic test, greatly facilitated by the availability of these rapid tests, are known<sup>37</sup> and confirmed by the experience in MSF's projects:

The systematic use of RDTs allows differential diagnoses to be made and increases the chances that the patient will be treated for the illness from which he or she is actually suffering. It encourages prompt detection and treatment of non-malaria fevers, which may be fatal if left untreated. MSF experience has shown that when proper information, training and supervision is ensured, health staff and patients trust the results of the RDTs.

In Bo, where RDTs<sup>38</sup> are used routinely and where transmission is high all year round, on a period of more than two years<sup>39</sup>, more than one in four of the 315,383 tests performed on patients with clinical suspicion of malaria were negative; this means that one in four suspected cases of malaria were in fact, not malaria. In Bongor, almost 160,000 people (40%) had a negative result out of the 393,239 tests performed between 2005 to 2007.

**These RDTs results show that on average in our projects, at least one out of four patients suspected of malaria did not have malaria and was in fact suffering from another illness for which ACTs would be of no help.**

<sup>37</sup> WHO malaria treatment guidelines 2006.

<sup>38</sup> RDTs used in MSF projects are HRP2 type RDTs.

<sup>39</sup> Between July 2004 and December 2006.

Without the test, these patients would receive an unnecessary but also useless treatment while their existing medical problem was left untreated.

Besides the risk of creating doubt about the efficiency of the treatment among the population – as patients' conditions do not improve after taking ACTs when having fever – and / or risk rare but existing side effects of the drugs, these figures clearly show the irrational use of the expensive ACTs by treating non-confirmed malaria cases.

In Kabanga in Mali, during the 2007 high malaria season, treating only patients with confirmed malaria allowed 7,000 treatments to be spared (23,000 out of 30,000 tested). Used on a national level, the impact of systematic use of a diagnostic can only be more significant. Although RDTs have a cost, they also save money by avoiding waste of treatment as well as the development of complications due to the delayed treatment of other illnesses (which in turn leads to re-consultation or hospitalisation). Their systematic use is also just better medical practice.

The development of resistance is another important potential impact of the wide use of ACTs for non-confirmed malaria. Indeed, as was the case with chloroquine, this is a real risk with ACTs. While artemisinin's half life (the duration that a medicine remains in the body) is less than one day and therefore carries much less chance of developing resistance, the half life of the companion drug is usually much longer; amodiaquine (AQ) for example will remain in the patients' blood for more than ten days<sup>40</sup>. In addition, the use of ACT for non-confirmed malaria may result in left over ACT pills as patients who do not get better may stop treatments and take the remaining pills when they develop another fever.

Despite the recognised benefits of the use of RDTs, WHO's present position for children under five years of age is that "there is as yet no evidence to show that the benefits of parasitological diagnosis in this highly vulnerable group outweigh the risks of not treating false negatives"<sup>41</sup>. In high transmission settings, children under five should therefore be treated with ACTs on the basis of fever (and no other obvious cause), as malaria is the most likely cause of their illness. In practice, this recommendation is usually translated at the national level by the systematic administration of ACTs to children under five who are presenting fever. MSF questions this approach.

Data from MSF's projects show that malaria is not as much the "likely cause" of fever as may be thought. In Kangaba in Mali, 75% of children under five with fever or a history of fever tested positive during the period of high transmission and only 53% during the low transmission period. In MSF's project in Sierra Leone, for children under five, on average 70 % of children tested in the health centres were positive for malaria.

Regarding the risk of developing severe malaria in "false negative patients", it is extremely limited when using tests that are now available on the market and which present high sensitivity (over 95%)<sup>42</sup>. MSF has started a multi centric study to follow up on patients under five years old with a negative RDT result to identify whether these children develop severe malaria. The first reports are encouraging; in a cohort of 120 children in Chad none has suffered a malaria episode in the two weeks that followed the RDT negative result. Although the risk of missing a malaria case when faced with a negative RDT is minimal, the risk of not treating adequately another potentially severe infection in children by treating all fever cases with ACT is very real and potentially serious.

Despite the limitations the present tests still present (see box on Rapid Tests), treating malaria cases confirmed by an RDT, including in children under five, is in MSF's experience more rational than treating malaria suspects on clinical grounds only.

<sup>40</sup> This means that when infected mosquitos bite patients, they will be exposed to an inferior dose of the medicines, which can lead to development of resistance of the parasite.

<sup>41</sup> <http://www.who.int/malaria/docs/TreatmentGuidelines2006.pdf>

<sup>42</sup> Assuming that tests are performed correctly which, as for any other procedure, requires training and supervision of staff.

## Rapid Tests – Need for further improvements

Tests such as the HRP2 type tests used by MSF are not yet optimal. One of the main problems is that it can remain positive up to several weeks after successful treatment<sup>43</sup> “confounding diagnosis when patients present with multiple fevers in a short time frame.”<sup>44</sup> Practically, this means that the test cannot be used when the patient has been treated efficiently for confirmed malaria in the preceding two weeks. But these cases represent only a very small proportion of the consultations. In MSF projects, the health care provider is instructed not to perform an RDT on patients who took a full ACT course in the preceding two weeks.

More research and development are needed to obtain better tests. MSF is using and/or testing in some places other RDTs<sup>45</sup> which become negative sooner, usually within 2-3 days of parasite clearance and as such have a lower risk of giving a false positive. Some of these tests also detect other types of plasmodium which is not the case for the HRP2.

Inclusion of systematic diagnostics of malaria in national protocols and programmes, and increased funding to ensure the availability of RDTs for systematic use before the administration of ACTs, should be ensured.

Whatever suspicions that prevent the use of existing diagnostic tools for a proper diagnosis of fever in children should be urgently addressed and international recommendations adapted in consequence.



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<sup>43</sup> The delay observed with HRP2 tests is due to the fact that this test detects a protein produced by the parasite remaining in the blood for a certain time after parasite clearance.

<sup>44</sup> “Reducing the burden of childhood malaria in Africa: the role of improved diagnostics”, M E. Rafael et al., Nature, 2006.

<sup>45</sup> Based on PLDH: test detecting an enzyme produced by the parasite.

### 3. Extending coverage through community based activities: quality care by village workers

In addition to the financial aspect, distance or other geographical barriers is another important factor influencing health seeking behaviour. Knowing that a majority of children who die from malaria do so within 48 hours of the onset of the illness<sup>46</sup>, early diagnosis and treatment close to home is an undeniably effective approach.

The community-based management approach (or home management of malaria) is suggested for places where populations live outside easy geographical reach of health facilities in order to increase coverage of malaria care, especially in children.<sup>47</sup>

MSF's experience with malaria village workers confirms the positive results in increasing coverage through this strategy. According to the different epidemiological patterns of malaria, the approach is deployed differently: in Sierra Leone, malaria village workers are active in the community throughout the year while in Chad and Mali they are active only during the peak season. In all cases, care is provided for free to patients.

Many more children and pregnant women can be promptly treated for simple malaria by having the community select the malaria village workers - which gives them legitimacy - and by procuring the tools and ensuring appropriate training and supervision.

Results from the projects also show that at the community level, systematic use of rapid diagnostic tests is possible and that the community approach is an effective way to increase the number of patients treated. For instance, in Chad, the malaria village workers could cure one episode of malaria per child per year in 2007.

***“ Free health care at the community level is a relief for the population during the rainy season. Drugs are available on the spot and are free while we have to pay at the health centre. Before free health care, children were dying a lot during the rainy season...”*** Interview of the village chief, in Mouhouna, Bongor district, Chad

The community-based approach is an efficient way to overcome geographical obstacles to existing health structures, but must not be seen as a substitute for them. In countries like Sierra Leone, where so few children are accessing malaria treatment in health centres, in addition to addressing geographical barriers, it is crucial to identify the reasons for the lack of use of services. Our experience has shown that financial barriers were a main factor influencing children's access<sup>48</sup>. Addressing this barrier – as well as improving in all possible ways access and quality of service<sup>49</sup> should be a priority. The community-based approach to decentralise malaria care comes as an add-on to improving access to health centres.

In the same way that systematic diagnostics need to be implemented at formal health structures, they also need to be considered in the community approach. Administration at the community level of ACTs to all children who present fever will lead to the use of enormous quantities of ACTs, potentially increase the risk of development of resistance and, more importantly, will not ensure that the children are treated for the illness they have.

In the past there was no way to confirm malaria diagnoses in remote areas. RDTs now make biological confirmation possible at every level of the health care pyramid and opens doors to new strategies such as trained malaria village workers. A much wider coverage of malaria needs is now possible through the decentralisation of the tools.

<sup>46</sup> “The Roll Back Malaria strategy for improving access to treatment through home management of malaria”. WHO, RBM Department, 2005.

<sup>47</sup> Ibidem.

<sup>48</sup> “Financial access to health care in post-war Sierra Leone”, MSF January 2006.

<sup>49</sup> Such as: patient-friendly organisation, on-duty service beyond working hours, sufficient staff, good patient flow to avoid waiting queues, waiting space protected from the sun, and available drinking water.

# CONCLUSIONS

# 5

Although major efforts have been made globally to increase the availability of prevention and curative tools to address malaria, many patients are still not getting the drugs they need, even when they are supposedly available in the country where they live.

In the past, a number of projects, including our own, failed to reach many patients. MSF's strategies for increasing access to malaria care are now based on:

- ensuring free access for patients to care: subsidising only drugs has proven ineffective in reaching patients in need who live in poverty. Only when MSF subsidised all the costs of care for patients, the number of people diagnosed and treated for malaria increased.
- ensuring quality of care by systematically using RDTs to confirm malaria falciparum, including in children under five, by trained and supervised workers.
- implementing community-based activities when geographical barriers hinder patients' ability to use existing structures, without compromising the quality of care by the systematic use of rapid diagnostic tests.

A decrease of mortality in the areas where these strategies are implemented is being observed.

Stakeholders engaged in addressing malaria must urgently consider integrating these strategies into their work to reduce the disease's impact on the health of populations living in poverty. Concretely, in addition to stepping up the availability of efficient malaria treatment at national level:

- the provision of health care free of charge should be considered systematically for all malaria projects. Actors subsidising drugs should include complementary measures to cover remaining payments (consultation, other drugs, etc.) expected from patients, in order to maximise the effectiveness of their intervention. The number of patients actually treated should be a crucial indicator to measure the effectiveness of any approach to malaria treatment.
- quality of care should be ensured by the systematic use of rapid diagnostic tests, including in the community-based activities implemented by lay workers.

Further research and development is needed to improve what is presently available, for example, to increase the type of ACT combinations, improve RDTs, and find alternatives to the drug used for prevention in pregnant women. Nevertheless, there is no valid reason for not using the tools presently available.

The ambitious national and international objectives of coverage of malaria care are not impossible, but doable only under certain conditions: besides the necessary political will and increased funding that need to be made available, barriers that are impeding patients' use of existing health services must be removed.

The only valid measure of progress in malaria care is the number of people who actually access the treatment they need.



