Improving Access to Antimalarials and Insecticide-Treated Nets in Malaria Control

Introduction

Malaria is a serious disease that can kill within hours. Pregnant women and children under five years of age are the groups most vulnerable to malaria. It is the leading cause of young child mortality, accounting for nearly 20% of deaths in sub-Saharan Africa. Malaria deaths among young children are caused partly by maternal infection during pregnancy. In addition, malaria slows down the economic development of countries.

Malaria is both preventable and curable. Effective strategies for controlling malaria include the following preventive and curative interventions:

- prompt access to effective treatment of malaria cases;
- vector control and individual protection against malaria by using insecticide-treated nets (ITNs) and indoor residual spraying;
- use of intermittent preventive treatment (IPT) among pregnant women in areas of stable transmission;
- control of malaria epidemics in outbreak-prone areas.

The effectiveness of these interventions for reducing malaria morbidity and mortality is well-established. However, the success of malaria control is partly dependent on achieving a high level of coverage of these interventions and partly on effective combination of the interventions such as artemisinin-based combination therapy (ACT) and use of ITNs. Fortunately, the international community is determined to provide the financial resources needed for malaria control through the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), World Bank, bilateral and multilateral cooperation agencies and to give the much-needed technical support through partners such as WHO.

Artemisinin-based combination therapy

Improving access to effective treatment is fundamental to avoiding the evolution of malaria cases into severe forms and ensuing death. A good malaria treatment should be early, effective, safe, affordable and accessible.

Unfortunately, over the past 20 years or so, the malaria parasite has developed resistance to common antimalarials, thereby undermining the efficacy of those drugs. WHO therefore recommends that countries face the problem of resistance by changing their malaria treatment policy and adopting ACT for the treatment of uncomplicated malaria. ACT is currently the best option available for malaria treatment.

The following antimalarials are recommended by WHO for Africa Region:

- artemether-lumefantrine (AM + LF),
- artesunate-amodiaquine (AS + AQ),
- artesunate-sulfadoxine/pyrimethamine (AS + SP).

The AS + SP combination is not recommended for countries implementing IPT with SP and countries that have high levels of parasite resistance to SP.

An artesunate-mefloquine (AS + MQ) combination too is not recommended for use in areas of malaria transmission given the long half-life of mefloquine which can lead to the emergence of resistance and intolerable side-effects in children.
**Strong demand, inadequate supply**

It is unanimously agreed that ACT is currently the best possible treatment of malaria in terms of efficacy and safety. Although the combinations are much more expensive, demand for them has increased exponentially given the existing opportunity to finance them through the Global Fund. As a result, demand for ACT worldwide rose from 2 million treatments in 2003 to 30 million in 2004 and then to 70 million in 2005. This understandably resulted in a temporary shortage at the end of 2004.

Needs and orders for ACT in the public sector in 2006 are estimated at 132 million treatments worldwide, of which 92 million are for Africa. Table 1 gives needs estimates provided by the Malaria Medicine and Supply Services.

Partners and pharmaceutical companies intend to ensure that many more ACT drugs are produced in coming years to bridge the gap between demand and supply. WHO convened a meeting with partners to address the issues of expanding the cultivation of *Artemisia annua* in east Africa (Kenya, Tanzania and Uganda) and to speed up local production of ACT medicines in other countries of the Region. It is estimated that harvests from *A. annua* farms in Tanzania and Kenya can produce commodities for about 30 million additional treatments.

**Table 1: ACT needs estimates for Africa (million treatments)**

<table>
<thead>
<tr>
<th>Drug in combination</th>
<th>June 2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM + LF</td>
<td>25-30</td>
<td>8-120</td>
</tr>
<tr>
<td>AS + AQ</td>
<td>20-25</td>
<td>2006</td>
</tr>
<tr>
<td>AS + SP</td>
<td>3-5</td>
<td>2006</td>
</tr>
<tr>
<td>AS + MQ</td>
<td>0.5-1.5</td>
<td>2006</td>
</tr>
</tbody>
</table>

In addition to the issue of global supply of ACT, other challenges to policy implementation include use of ACT at community level, high costs and monitoring of possible side-effects through pharmacovigilance.

**Improving malaria prevention**

The most important strategy in malaria prevention in Africa is to promote the use of insecticide-treated nets in malaria-prone areas. The effectiveness of this measure is well-known: a high coverage rate reduces malaria transmission by 90% and infant mortality by 20% in addition to reducing anaemia in pregnant women and the incidence of low birth weight.

Apart from conventional bed-nets which require initial treatment with insecticide and subsequent periodic re-treatments, there are also the long-lasting insecticidal nets (LLINs) which have the advantage of being easy-to-use and long-lasting. Two types of LLINs, the Olyset® bednet and the Permanet® bednet, have been evaluated by the WHO Pesticide Evaluation Scheme (WHOPES) and are recommended by WHO.

As in the case of ACT, the increase in funding for malaria control has resulted in a substantial increase in demand for LLINs since 2004, thus creating a shortage. LLIN need estimates for children under five years of age and pregnant women in Africa are 180 million nets; however, present production capacity is 30 million nets.
**Increasing ITN coverage**

In malaria-endemic areas, the priority is to protect vulnerable groups (children under five years of age and pregnant women) through the use of ITNs and, subsequently, to expand coverage to the entire population. It is worth noting that the present coverage of ITNs remains very low, estimated at about 2% of children aged below five years. There is need therefore to scale up ITN coverage.

To increase ITN coverage rapidly and significantly, integration with free immunization services and antenatal consultation services must be used more frequently and outreach to vulnerable groups must increase. Free or heavily-subsidized distribution of ITNs must be undertaken during:

- routine immunization campaigns, measles immunization campaigns or poliomyelitis national immunization days;
- infant consultations;
- antenatal consultations;
- mass net treatment campaigns.

**WHO actions to improve access to ACTs and ITNs**

WHO actions to improve access to ACT include improving treatment effectiveness; increasing access to funding and enhancing geographical accessibility of treatment.

WHO has provided technical support to countries to adopt and implement ACT and treatment policies. Specific support includes:

- development of training manuals and training health workers and community members in ACT use;
- quantification and procurement of antimalarials and their distribution among appropriate structures;
- monitoring ACT efficacy and safety (pharmacovigilance).

WHO has also supported countries in the preparation and submission of requests to the Global Fund to finance ACT and promoted the strategy of home-based management of fever.

For increased access of the population to effective treatment, it must be available at levels as close as possible to the home since that is where a large majority of malaria cases are managed in Africa. Furthermore, in endemic countries, it is difficult to provide effective treatment only in health facilities due to the weak health systems. Enhancing geographical accessibility will help improve treatment compliance and will have a positive impact on malaria progression. That is why the WHO Regional Office for Africa recommends that if ACT is adopted as first-line malaria treatment in health facilities, it should also be adopted as first-line treatment at community level.

The need to rapidly and significantly expand ITN coverage prompted WHO and UNICEF to issue a joint statement on malaria control and immunization: a sound partnership with great potential (WHO/HTM/RBM/2004.52). This statement stresses the need to assign ITN distribution and re-treatment interventions to immunization services and antenatal consul-

![Artemisia annua farms in Chegutu District, Zimbabwe, November 2005](image_url)
ITN costs should not be allowed to hinder access to ITNs which should be available to all young children and pregnant women. ITNs should therefore be distributed free-of-charge or at a highly subsidized price to vulnerable populations. Immunization and antenatal consultation units that already provide free services should also be used for free distribution of ITNs to vulnerable groups.

**Successful experiences**

The most recent and most successful experience is the integrated campaigns of immunization against measles and poliomyelitis coupled with free distribution of ITNs and mebendazole in Togo. In Zambia, the measles immunization campaign coupled with the distribution of ITNs, vitamin A and mebendazole helped in 2003. Tanzania and Ghana have achieved significant and rapid increases in coverage through integrated distribution campaigns. Since 2004, Eritrea has achieved a coverage rate exceeding 60% both in ITN use and in prompt treatment within 24 hours (see articles in this volume).

**New developments**

It is expected that with the impetus given by the Malaria Medicine Venture (a private-public partnership) research activities will lead in the coming years to the production of the following:

- standard combinations: proguanil + dapsone + artemesunate; AS + AQ; pyronaridine + artemesunate; and AS + MQ;

In the area of prevention, the BASF laboratory is expected to produce a new type of LLIN. The same laboratory has already produced a long-lasting treatment kit which has been submitted to WHOPES. Tanzania should also be in a position to produce one million LLINs (Olyset®) locally by 2005.

**Conclusion**

Effective malaria control tools and interventions are available. However, they can only be of optimal effectiveness if they have a very high coverage and are used in combined form. Furthermore, the international community is now willing, more than ever, to finance malaria control. Political commitment of countries and support of technical partners are now a reality. The foregoing underscores the need to seize the current opportunity and face up to the challenge of rapidly expanding coverage of control interventions in order to “roll back malaria” on a sustainable basis so that malaria will cease to be a public health hazard by the year 2010.

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