

# Malaria control in Malawi: are the poor being served?

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Abstract

**Background:** In Africa, national governments and international organizations are focusing on rapidly “scaling up” malaria control interventions to at least 60 percent of vulnerable populations. The potential health and economic benefits of “scaling up” will depend on the equitable access to malaria control measures by the poor. This paper analyses the present inequalities in access to malaria interventions in Malawi.

**Methods:** Equity in access to malaria control measures was assessed using the Malawi Demographic Health Survey (DHS) 2000 and the 2004 National Survey on Malaria Control. Utilisation of malaria control methods was compared across the wealth quintiles based on asset scores found in the DHS. For the 2004 national data set, principal component analysis was used to create quintiles, to determine whether the poor were being reached with malaria con-

trol measures.

**Results:** Although significant progress has been made in the use of insecticide treated nets and intermittent preventive treatment during pregnancy, these effective malaria control interventions remain inaccessible to the poor. Effective treatment of fever remains unacceptably low with only 17% of the under-five children being promptly treated with an effective antimalarial drug.

**Conclusions:** The present distribution strategies for malaria control interventions are not addressing the needs of the vulnerable groups, especially the poorest of the poor. However, increasing access to malaria interventions by the poor will require government and community commitment to malaria control and donor support to underwrite the cost of the interventions.

## Background

The global community already has highly effective tools to control malaria; insecticide-treated nets (ITNs), intermittent preventive treatment (IPT) in pregnant women, and prompt and effective case management. Under controlled trial conditions, ITNs have consistently led to a 15 to 20 percent reduction in child deaths<sup>1</sup>. Evaluations of programmes delivering ITNs have shown substantial benefits from their use<sup>2</sup>. IPT in pregnant women with the use of safe and effective antimalarial drugs given at specified intervals in pregnancy has been shown to reduce malaria and its consequences—placental parasitaemia and anemia—in the pregnant woman and to reduce the risk of low birth weight in newborns<sup>3</sup>. And finally, prompt and effective case management is associated with reduced anemia in young children<sup>4</sup> and can be lifesaving for persons with acute, severe, or complicated malaria. However, maximum benefit can only be realized if national malaria control programmes can achieve high coverage with the interventions, especially amongst the poor. The challenge now lies in finding distribution models that will ensure equitable distribution of the interventions.

Because malaria causes poverty and prevents or reduces people's ability to escape poverty, and because the consequences of malaria fall heavily on the poor<sup>5</sup>, the three interventions have been included in the Essential Health Package (EHP), the health sector's contribution to poverty reduction in Malawi. As a result, the national malaria control program and international organizations are now focusing on scaling up the three interventions so as to significantly reduce malaria morbidity and mortality. However, the success of the efforts to scale up will be limited if the poor are denied access to malaria control measures.

This study analyses the inequalities in access to malaria interventions in Malawi and will provide a baseline for the monitoring and evaluation of equitable access and use of malaria interventions. It is one of a series of studies commissioned by the Malawi Ministry of Health (MOH) through its Sector Wide Approach (SWAp) Technical Working Group on Monitoring and

Evaluation. Findings from this study will also provide practical recommendations for the implementation of the essential health package.

## Methods

National data sets, including the Demographic Health Surveys (DHS) of 2000 and the 2004 National Survey on Malaria Control, were analysed with respect to access to malaria control methods. Socio-economic status was measured by creating quintiles based on asset scores found in the DHS 2000. For the 2004 national survey, principal component analysis (SPSS) was used to create quintiles, based on World Bank and Measure published methods<sup>6</sup>. Utilization of malaria control methods was compared across the wealth quintiles to determine whether the poor were being reached with malaria control measures. Concentration Index (CI) was also used to measure equity in access to an intervention across all the socio-economic groups. The concentration index is a measure of equality with a range from -1 to +1<sup>7</sup>. An index of zero indicates perfect equality and -1 or 1 complete inequality.

## Results

### *Insecticide Treated Nets Use*

Figure 1 shows the progress in ITN distribution made since 1998, when the ITN social marketing program was first introduced in Malawi. By March 2004, 35% of the households in Malawi owned at least one ITN. ITN ownership and use is associated with living in urban areas, higher educational levels and higher socio-economic status. The most important reason given for not owning an ITN is poverty.

Figure 2 shows net ownership across the wealth quintiles in 2000 and 2004. There was inequitable ownership of nets both in 2000 [CI = 0.3 (0.2 – 0.5)] and 2004 [CI = 0.11 (0.03 – 0.26)]. Although coverage had increased significantly from 5% to 35%, equity (based on concentration index), had only increased from 0.33 to 0.11. The overlapping confidence intervals of the concentration index means inequity to net use had not changed between 2000 and 2004 to any significant degree.

Figure 1: Number of ITNs distributed through the social marketing program: 1998 – 2004.

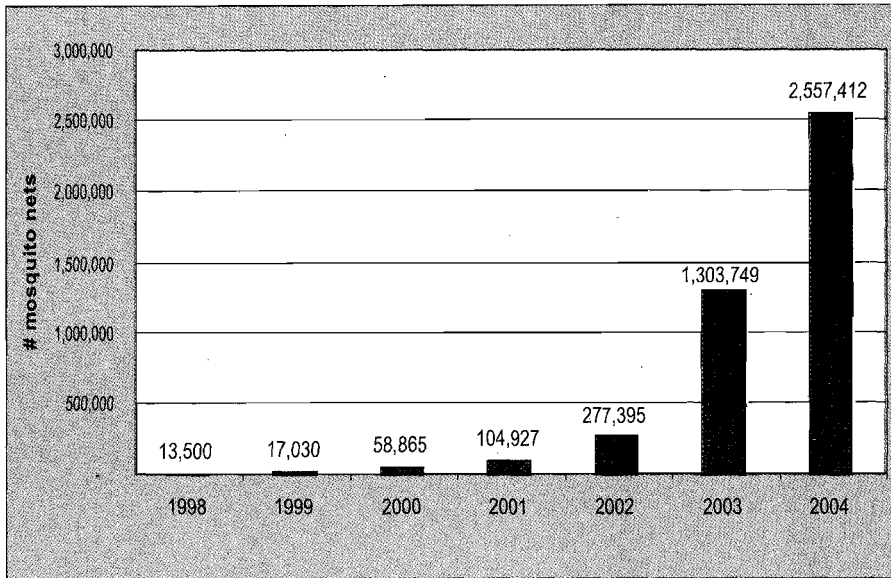
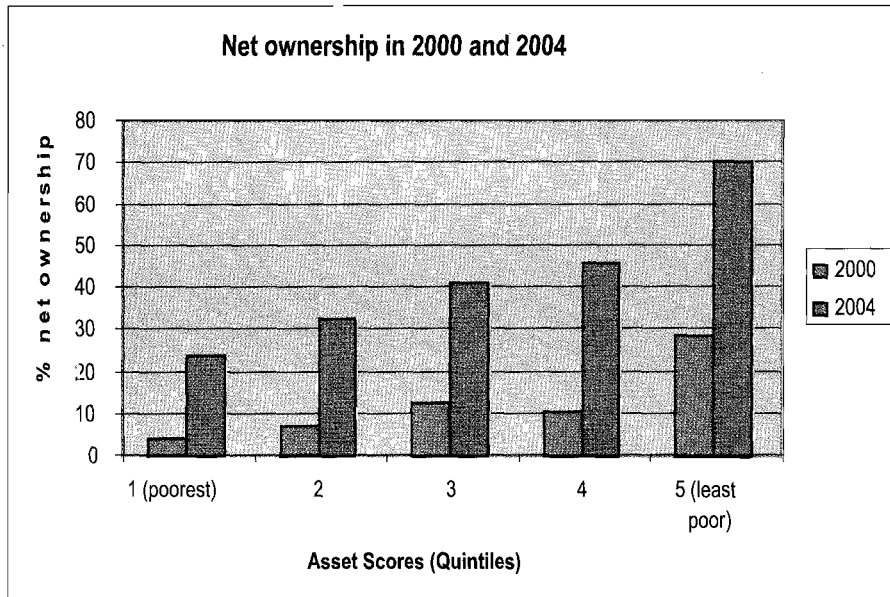


Figure 2: ITN ownership across the wealth quintiles in 2000 and 2004.



**Reaching the poorest of the poor**  
 2000 = 4% net ownership  
 2004 = 24% net ownership

**Concentration Index**  
 2000 = 0.004 (CI= -0.02 – 0.02)  
 2004 = 0.3 (CI= 0.06 – 0.54)

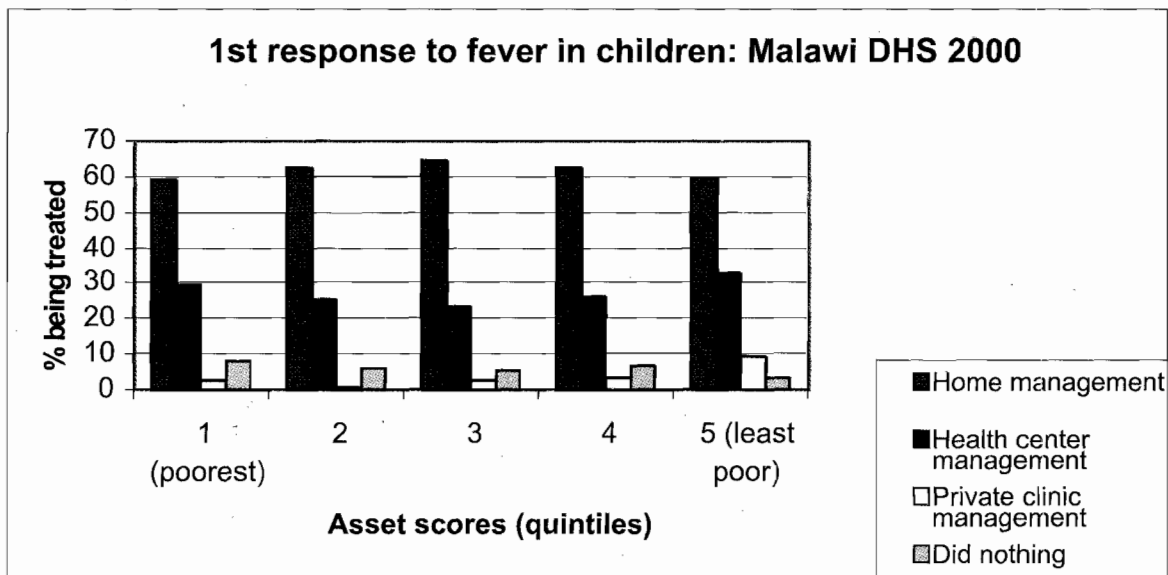
**Treatment of fever**

Using data from the Malawi DHS 2000, home management of fever was very common with over 60% of the cases being managed at home first across all the socio-economic groups. There was equitable use of home management [CI= 0.004 (-0.02 – 0.02)] and health facilities [CI= 0.01 (-0.06 – 0.09)] across the socio-economic groups when treating fever (see Figure 3). Not surprisingly, there was as inequitable attendance at private clinics [CI=0.3 (0.06 – 0.54)], presumably because the poor cannot afford to pay for services at the private clinics. Very few caregivers did nothing about their children’s fevers, but for the care-

takers who did nothing, the poorest were 2.5 times more likely to do nothing than the least poor, although this was not statistically significant [CI= -0.11 (-0.25 – 0.03)].

Only 23% of children with fever, regardless of where they received treatment, had access to an effective antimalarial drug in 2000. Access to the effective drug was inequitable with only 21.5% of children in the lowest quintile getting treatment compared to 32% in the highest quintile [CI=0.03 (0.01 – 0.06)]. And only 17.6% of the poorest children were treated promptly, although prompt treatment was not different across the wealth quintiles [CI= -0.16 (-0.59 – 0.26)].

Figure 3: First response to fever in Malawi: Malawi DHS 2000.



#### Reaching the poorest of the poor

59% treated at home  
29.6% treated at h/centre  
2.9% treated at private clinic  
7.8% did nothing

#### Concentration Index

Home management=0.004 (-0.02-0.02)  
Health centre management=0.01 (-0.06-0.09)  
Private Clinic=0.3 (0.06-0.54)  
Did nothing=-0.11 (-0.25-0.03)

#### Intermittent Preventive Treatment

The 2000 Malawi DHS indicates that 68% of all mothers received at least one dose of SP/Fansidar as a prophylaxis and that 29% received at least two doses. 57.8% of pregnant mothers from the poorest quintile received at least one dose compared to 79.5% of the richest, although the difference was not statistically significant. For those that received two doses or more, the differences across the socioeconomic groups were not statistically significant.

#### Discussion

Rapidly increasing national coverage of ITNs is central to Malawi's strategy of malaria control<sup>8</sup>. The challenge is in finding a distribution model that will ensure high and equitable ownership of ITNs. In Malawi, ITNs are distributed through the social marketing program. By definition, social marketing discriminates against the poor who may not have disposable income needed to afford health products<sup>9</sup>. Not surprisingly, by 2004, only 24% of households in the poorest socio-economic group had ITNs compared to 71% in the least poor group. Alternative distribution methods are therefore urgently needed if Malawi is to scale up ITNs for impact, especially amongst the very poor. These methods could include free distribution of ITNs at least to vulnerable groups, including the very poor. There is evidence to show that targeted free distribution of ITNs is equitable. In Ghana, overall household ITN ownership increased from 4.4 percent to 94.4 percent when free distribution of ITNs was linked to a measles campaign with households in the poorest quintile achieving a post-campaign coverage ten times higher than the pre-campaign coverage of households in the wealthiest quintile<sup>10</sup>. Distribution of 100% subsidized ITNs to pregnant women and under-five children could also be done through antenatal clinics and EPI clinics. In fact, free distribution through antenatal clinics has been shown to be a simple, cheap and equitable approach to delivering ITNs to pregnant women<sup>11</sup>. More operational research is required to assess if nets

can be treated like vaccines and be routinely provided through EPI clinics.

Other observers have called for the free distribution of ITNs amongst the poorest of the poor to address the needs of the poor. Unfortunately, proxies for the identification of the poorest of the poor are difficult to define and have not been defined yet in Malawi. In our view, free distribution of ITNs should focus on the already identifiable vulnerable populations: pregnant women and children under five years of age. Only when very high coverage and equity is achieved in these groups, will the burden of malaria morbidity and mortality be significantly reduced in Malawi.

Equitable provision of effective treatment in Malawi is a challenge because of the poor health system, inadequate drug stocks, and lack of money to pay for services. In 2000, over 60% of the fevers were managed at home with drugs bought at pharmacies or local shops. Since the targets of malaria treatment are primarily the poor who are usually left behind by market forces, under-served by health services, have little access to health information and may not be able to utilize the services available, we suggest that the communities themselves should be empowered to deliver antimalarial treatment nearer the home. This empowerment could be in the form of community distribution of free antimalarials by community health workers (HSAs) or community volunteers, a method that has been proven to significantly reduce malaria morbidity and mortality in children, and to increase equity in access<sup>12,13</sup>. However, the establishment of such a distribution method would depend on the cost implication of the program to the country. Malawi is about to change its national malaria drug policy from monotherapy to a combination therapy, and community distribution of any combination therapy could be prohibitively expensive. It is our view that a drug policy which excludes the free distribution of antimalarials to the poor at village level will fail to address the equity issues raised in this study and could even lead to increased malaria morbidity and mortality.

Untreated or delayed treatment of falciparum malaria con-

tributes both directly and indirectly to the death of non-immune individuals, sometimes within hours of the onset of symptoms<sup>14</sup>. In this study, only 17% of children with fever from the poorest quintile were promptly treated with an effective antimalarial drug and the poorest households were more likely to wait for two or more days before they use any antimalarial drug for fever. Equitable availability and access to effective antimalarials at the community level would lead to an increase in coverage of prompt treatment, especially amongst the poorest of the poor.

The high antenatal attendance rate presents a great opportunity to reach more women, especially the poor, with IPT in Malawi. Although antenatal attendance is high, attendance and IPT use is lower in the poorest socio-economic group. In 2000, only 29% of pregnant women had received the normal two doses or more of SP/ Fansidar during the last pregnancy. Barriers to low IPT coverage among poor women include inadequate knowledge or confusion among health staff regarding the proper timing of the second dose of SP, stock shortages of SP at health facilities and apprehension among pregnant women to take SP<sup>15</sup>. To avoid the confusion as to when to administer the second dose, IPT could be given at every antenatal contact with the pregnant woman. To date there is no evidence that shows that women who receive more than two doses of SP have increased adverse drug reactions or increased number of adverse pregnancy outcomes than those with less doses or on placebo. This recommendation assumes that SP will remain an effective drug for IPT in Malawi, even with increasing drug resistance. In the event that combination therapy is chosen for IPT, then further research on the effective distribution channels to ensure equitable access to IPT will be needed.

### Conclusions

Progress on implementing the effective malaria interventions described above has been not been satisfactory since the Abuja Summit. Rapid scale-up of these interventions could lead to substantial improvements in child survival and in health and economic benefits. However it is obvious that increasing access to ITNs, effective antimalarials and IPT by the poorest of the poor will require government commitment to malaria control, donor support to underwrite the cost of the interventions and a strengthening of the health systems to ensure equitable delivery of the interventions.

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