

**INTEGRATED APPROACH TO REDUCING MALARIA
RELATED MORBIDITY AND MORTALITY IN
RWANDA**



JULY 2008

TABLE OF CONTENTS

1. The context and overview	3
2. Mass distribution of Long lasting Insecticide-treated nets to children aged between 6 months and 5 years through an integrated measles, Mebendazole and Vitamin A campaign	3
2.1. Introduction.....	3
2.2. Implementation of the joint LLINs/Measles/Vitamin A/Mebendazole campaign .	4
2.3. Results of the campaign	5
2.4. Lessons learnt and way forward.	5
3. Distribution of LLINs through routine immunization (EPI) and antenatal care (ANC)	5
3.1. Introduction.....	5
3.2. Implementation of LLIN distribution through routine immunization and ANC in Rwanda	6
3.3. Results of LLIN distribution through ANC and routine EPI.....	6
3.4. Lessons learnt and way forward	6
4. Implementation of malaria control activities through the integrated community health program by volunteers/health workers.....	7
4.1. Introduction.....	7
4.2. Implementation of home based management of malaria (HBM) in Rwanda	7
4.3. Results HBM.....	8
4.4. Lessons learnt.....	9
5. Other Support Interventions.....	10
5.1 Integration of malaria surveillance into IDSR and subject to obligatory weekly surveillance and the Malaria Early Warning System (MEWS).....	10
5.2 The community Health insurance scheme (Mutuelle de Santé)	11
5.2.4. <i>Lessons learnt</i>	11
6. Conclusion	14
REFERENCES	15

1. The context and overview

Malaria has been the leading cause of morbidity and mortality in Rwanda since the early sixties, with occasional epidemics in the high altitude areas. In the late 90's , malaria accounted for over 50% of the outpatient attendance, a case fatality rate of up to 6% in district hospitals¹with only 7% households owning at least a mosquito net in 2003. Rwanda has few health workers with formal training, with the few available doctors mostly based in the urban areas and yet 83% of the population is rural-based².



H.E Paul Kagame, the President of Rwanda launches the distribution of LLINs to pregnant women through the antenatal clinics, Nyanza - Southern province 2004.

Rwanda developed a malaria strategic plan whose main interventions were the use of ITNs,,behavior change communication, as well as effective treatment..

Under the leadership of the National Malaria Control Programme (PNILP), Rwanda has scaled up malaria control and prevention. This report is a summary of the key strategies and practices that have enabled this scale up:

1. Distribution of ITNs through mass campaigns and routine services targeting children and pregnant women
2. Implementation of malaria control activities through the integrated community health program by volunteers/health workers.

2. Mass distribution of Long lasting Insecticide-treated nets to children aged between 6 months and 5 years through an integrated measles, Mebendazole and Vitamin A campaign

2.1. Introduction

Since Rwanda has a high immunization coverage and previous measles campaigns were successful, it was decided to include LLINs distribution in the campaign held from 5th to 9th September 2006, to enable rapid scale up .



The State Minister for Health in Charge of HIV/AIDS launching the joint ITN, Measles, Mebendazole and Vitamin A campaign, September 5th 2006.

2.2. Implementation of the joint LLINs/Measles/Vitamin A/Mebendazole campaign

Several planning and consensus building meetings were held between the National Malaria Control Program (PNILP), the National Immunization Program (EPI), and the Global fund Program management Unit (GPFMU). Later, a steering committee composed of the 2 Ministries as well as technical assistance partners (UNICEF, WHO, French Cooperation, the Rwandan Red Cross, PSI and IntraHealth) was set up. District-specific micro-plans that outlined the key activities and roles were drawn by the DHTs and implementing partners. Monthly and weekly coordination meetings before, during and just after the campaign involving the key partners.

Both EPI and PNLP were responsible for procuring, storage and transportation of the commodities, which were delivered to the districts at least one week to the start of the campaign. The personnel costs related to the actual distribution of the commodities were shared between the LLINs and the other products; with PNILP funding 3 out of the 10 personnel at each distribution site. The ITN component was funded using R3 and 5 of the Global Fund grant. Transportation of ITNs was sub-contracted by CAMERWA (the central medical stores) to PSI while the other commodities were transported by the DHTs.

Over 19,000 health care and community care workers were trained 2 weeks before the campaign and posted to 2,000 immunization sites. To assure quality during the campaign, each district was allocated 4 supervision teams equipped with transport and extra commodities in case the centers run out.



On the left: Child receives measles vaccination and LLIN during the campaign

2.3. Results of the campaign

About 1,364,897 LLINs were distributed with an uptake of 101% of children targeted. Coverage of the measles vaccine and other commodities was 107% in 2006 compared with 101% in 2003. However, the campaign ran out of ITNs for children and was forced to divert LLINs meant for distribution through ANC to pregnant women. The cost of implementing the campaign (excluding the cost of the commodities) was Frw 806,946,897 (USD 1,464,512.7) or USD 1.07 per child. A post-campaign evaluation 4 weeks after the campaign showed that 95% of children under 5 surveyed were actually sleeping under LLINs³.

2.4. Lessons learnt and way forward.

1. The population is eager to receive and use LLINs as evidenced by the massive turn up that led to a shortage of ITNs. As a result, ITNs meant for free distribution to pregnant women were diverted to the campaign. Consequently, pregnant women did not receive free ITNs between September and December 2006. Therefore, establishing the correct numbers to target is very important if the campaign is not to run out of commodities and negatively impact on other programmes.
2. Joint planning and involvement of all concerned parties is key to success. However, mustering the support and involvement of all stakeholders takes time in negotiations and consensus building on the approach.
3. BCC is an effective tool in promoting the utilization of LLINs. The post campaign results demonstrate that the intensified BCC and mass media campaigns must have contributed to the high coverage of ITNs.
5. Data management including proper record keeping at the sites must be addressed during planning, training and implementation. At the end of the campaign, there were delays in data submission and some reports required further validation.
6. There is need for a plan to avail ITNs to the section of the population that become eligible after the campaign (e.g. children who are born, etc) to avoid creating groups of unserved populations..

3. Distribution of LLINs through routine immunization (EPI) and antenatal care (ANC)

3.1. Introduction

In Rwanda, utilization of ANC and immunization services is high with 94% of pregnant women attending ANC at least once while immunization coverage is over 90% for most antigens. Consequently, immunization and ANC were chosen as channels for reaching both children and pregnant women respectively.

Therefore, since June 2006, pregnant women receive a heavily subsidized LLIN on their second ANC visit. Since January 2007, children receive a free LLIN with the measles vaccination at 9 months. The timing of delivery of ITNs is because in

Rwanda, children sleep with their parents up to at least one year and so will be covered by the ITN provided to the mother.

3.2. Implementation of LLIN distribution through routine immunization and ANC in Rwanda

Every year, each health centre calculates ITN requirements based on estimates of the target population. Every quarter, the district requisitions LLINs and vaccines for all health centers. The quarterly stock of LLINs is distributed directly to the health centres through the usual channels that are used for drugs and other medical supplies.

During the first ANC visit, the pregnant woman is counseled on malaria control, the risks of malaria in pregnant women and advised to come with 200 Frw on her next visit for an LLIN. On her second ANC visit, she pays 200 Frw (USD 0.3) and receives an LLIN, which is also inscribed on her ANC card.

To monitor the distribution of LLINs registers and receipt books were developed and distributed to all health facilities. The ANC cards, EPI cards and monthly reporting forms were amended to include a slot for LLINs. Every month all the data is summarized into an integrated form and is sent to the district and subsequently to the national level.

3.3. Results of LLIN distribution through ANC and routine EPI

In 2006 and 2007, up to 206,908 and 320,824 LLINs respectively to pregnant women during 2006⁴, this is equivalent to an uptake of 65% and 98.4% in 2006 and 2007 respectively. The lower coverage during 2006 was due to a stock out which resulting from LLINs diverted to the integrated campaign.

With regard to children, 326,200 children (100%) of all children receiving measles vaccine at 9 months received an LLIN. The immunization program has probably benefited from the introduction of LLINs during immunization, with the proportion of children fully immunized increasing from 76% in 2005 to 90 in 2008⁵.

3.4. Lessons learnt and way forward

1. Integration of LLINs into routine EPI and ANC activities is possible and feasible. The synergies of the two programmes can lead to higher coverage of the interventions.
2. Storage of ITNs presents a problem since LLINs are bulky and yet most health centres are small. As a result it is common to find LLINs stored in corridors and conference rooms, even when supplied on quarterly basis.
3. For effective monitoring of the integrated activities, the key indicators must be integrated in the reporting tools.

4. Implementation of malaria control activities through the integrated community health program by volunteers/health workers.

4.1. Introduction

In 2000, utilization of health services in Rwanda was low; only 17.4% of children received care from health facilities when they had fever⁶ The rest sought treatment at home often with ineffective drugs.

To improve access to health care, Rwanda trained over 19,000 community health workers (CHWS). They are trained to assess children with fever, treat uncomplicated cases and refer complicated ones. They also assess and escort pregnant women to health facilities for delivery, conduct nutritional monitoring of children, follow up children born of HIV infected mothers, offer HIV counseling, carry out TB screening for people living with HIV and support patients on antiretroviral treatment with their adherence. They also record and report births and deaths; and monitor and improve the utilization of LLINs by families.

4.2. Implementation of home based management of malaria (HBM) in Rwanda

The program started 2004, in 4-6 health facilities in 4 highly endemic districts and was progressively expanded to include more districts and more health facilities in the selected districts, to reach 12 districts in 2006 and 18 districts in 2007.

Antimalarial drugs were appropriately packaged with easy to read instruction in Kinyarwanda.



Sample of antimalarial drugs for HBM in Rwanda: note instruction in kinyarwanda

Health care workers and distributors were trained on HBM when Amodiaquine/Sulphadoxine-Pyrimethamine was the first line treatment at the time. They were also supplied with registers, patient referral forms and monthly reporting forms.

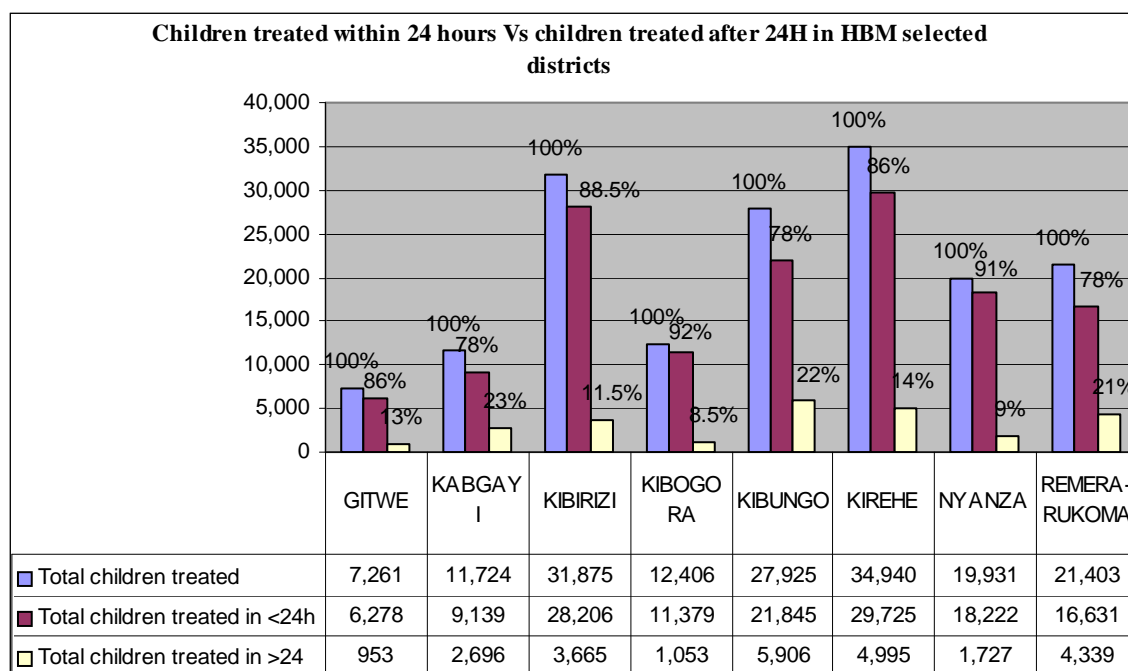
In addition, an intense BCC campaign informed the communities about the intervention..

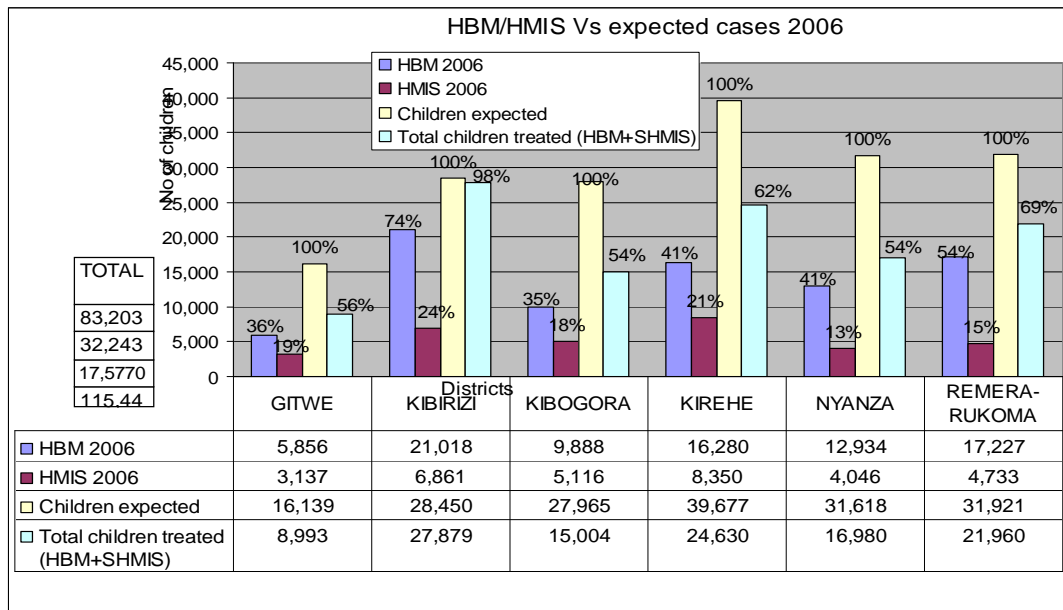
Distributors assess and treat children aged between 6 months and 5 years with fever and refer younger and older children as well as complicated cases to the health centers. They record all patients treated in the register, that is auto carbonated and at the end of the month tear out the original and send it to the health center. They remain with a copy in the register book.

To further improve the HMM programme, Rwanda is introducing rapid diagnostic tests (RDTs). In April 2008, RDTs were introduced in 2 districts and will be rolled out progressively to more districts after evaluating the implementation in the first 2 districts.

The related tools and a focal person designated to coordinate the program at the national level. The program started when the first line treatment was. When change was made to Artesunate-Lumefantrime, the transition in HBM also occurred smoothly.

4.3. Results HBM





By the end of 2007, HBM had been implemented in 18 districts. An external evaluation of the HMM programme in 2007 showed that in the districts where HBM is being implemented 80% of all children aged under five years were treated for fever within 24 hours of onset compared with the national average of 62.6%⁷. Also, there was a reduction in the number of malaria cases treated in the health centers since 60% of all cases of malaria in the under fives are treated through HMM, in spite of the increased overall utilization of health services. The evaluation also showed that 97% of the children treated through HBM were treated correctly and responded adequately to treatment. Also, between 2004 when HBM started and 2006, malaria mortality and case fatality rates decreased by 64% and 46% respectively in the HBM districts compared to the non-HBM districts. The incidence of severe malaria was 33% lower in the HBM districts in comparison to the non-HBM districts and significantly more children in HBM districts received care for fever within 24 hours of onset than those in non-HBM districts.⁸

With only 22% of children under five with malaria having access to treatment within 24 hours of symptoms onset⁹.

4.4. Lessons learnt

1. Community Health workers and other community-based volunteers are effective in ensuring early treatment of fever.
2. When trained, they can safely and adequately offer services of acceptable quality to patients and form an efficient referral and counter-referral system with the community
3. Being volunteers that are not paid, distributors need regular and ongoing



The Prime Minister Bernard Makuza offers a present to the best performing distributors

motivation to do their job. A clear and transparent system for the motivation of community health workers is necessary to avoid attrition and/or abuse of their role

4. When the HBM system is well established, changing the type of drugs does not affect its efficiency and but it may delay implementation. In the case of Rwanda, changing from Amodiaquine/SP to Artesunate-Lumefantrine resulted into delays and a near halt in HBM activities as the pharmaceutical companies were not ready to repackage their products under different, country specific brands.

As a way forward, Rwanda is considering scaling up HMM to all districts for impact. However, do to the epidemiological transition from high to low endemicity, HMM should be based on parasitological confirmation. There is anecdotal evidence that more and more fevers among children are unlikely to be due to malaria.

5. Other Support Interventions

Apart from the measures described above, a number of other factors and accompanying measures played a role in achieving the success noted in malaria control in Rwanda. These include the firm and unwavering political commitment, shown from the highest level of the government throughout the local administration; and the steady and enduring partnership. The integration of malaria into the national integrated disease surveillance system as well as the national wide community insurance schemes played a key role in improving early detection of epidemics and increasing the utilization of health facilities respectively.

5.1 Integration of malaria surveillance into IDSR and subject to obligatory weekly surveillance and the Malaria Early Warning System (MEWS)

In the post war period, there was a lot of population movement in Rwanda, coupled with deforestation. This resulted into outbreaks of different epidemics including malaria. While other diseases had defined surveillance, epidemic detection and response mechanisms, none existed for malaria. There was no proper definition of what constituted a malaria epidemic (epidemic threshold) and there was no real time surveillance system so that epidemics would be recognized belatedly and with a lot of difficulties. Malaria was only notified through the monthly HMIS reports that would come with 4-6 weeks delays and at times longer.

Following this problem, the Ministry of Health Units responsible for malaria and epidemiological surveillance, formed a working group to define a malaria surveillance system. Reporting of both confirmed and suspected malaria was included in the weekly epidemiological surveillance system, with clearly defined epidemic thresholds.

Integration of malaria surveillance into IDSR led to timely detection and response to malaria epidemics. As a result, the delay in detection of malaria epidemics, that fell from over 2 months to 2 weeks¹⁰ and the delay in response fell from 2 weeks to 2 days¹¹. However there has been a significant reduction in malaria epidemics.

The key lesson learnt is that integration of malaria into the national IDSR system is a feasible and efficient way for ensuring malaria surveillance.

Given the changing malaria epidemiological profile, the (PNILP) should review and support health facilities develop new epidemic thresholds.

5.2 The community Health insurance scheme (*Mutuelle de Santé*)

The utilization of health services was very low in Rwanda, standing at 33% in 2003¹². Only 17.4% of under fives received care from either a health center or from a recognized private clinic when they had fever. Most pregnant women delivered at home in spite of high ANC attendance in the antenatal clinics, delivered at home. About 27 % of pregnant women delivered in a health facility according to the DHS 2003 and 2005.¹³ The main reason for not seeking health care from established health facilities was because they could not afford the costs of medical care¹⁴.

Recognizing this problem, the Government of Rwanda conceived the idea of introducing and implementing health insurance schemes for every Rwandan.

Recognizing that most Rwandese live below the poverty line, most people would not be able to afford the annual premiums. The Government of Rwanda (GoR) developed the Community health Insurance (*Mutuelle*) Policy that would enable the subsidization of annual premiums and pooling of risks. Using one of the Global Fund grants and funding from Belgian Cooperation, the *Mutuelle* fees of the poor and very poor would be paid by the GOR. An annual premium of 1,000 Frw (about USD 1.5) per person was determined as the registration fee.¹⁵ Local leaders helped identify the very poor that could not pay for themselves, The *Mutuelle* always covered the entire family. The adherent member receives a membership card that entitles him to treatment at the health center when he is sick, and at the district hospital when he is referred by the health center. The patient pays 15% of his medical bill at the health centre. At the hospital, he pays 15% if he was referred. Patients seeking care from the district and referral hospitals without a referral from the health center pay their full bills. Tools for managing the *mutuelle* scheme including claims, receipts and billing guide were developed and disseminated to all hospitals and health centres.

Following the implementation of the *mutuelle* policy and GoR subsidy towards adhesion of the poor, adherence to health insurance increased from below 7% in 2003 to 44.1% in 2005 and to 73% in 2006. Also, the utilization of health services increased from 33% in 2003 to 60% in 2006¹⁶ and 83% by June 2008¹⁷. The results of the interim DHS (2007) revealed that the proportion of women delivering in a health facility had increased to 52.1% from 28.2% in 2005¹⁸. Nationally, 35% of children with fever received care from a health facility up from 26.9% in 2005¹⁹.

5.2.4. Lessons learnt

1. Financial accessibility is an important limitation to the access to and utilization of health services and when this barrier is removed, the population can quickly seek their care from established health facilities.
- 2.



Partnerships: The archbishop of Kibungo talks to women about malaria control during the malaria day festivities.

3. Partnership is key to the success of malaria control activities in general and health financing in particular

6. Outcomes and Impact.

According to the DHS of 2003, only 7% of household had at least a mosquito net; availability being lower in the rural areas than and as low as 1% in the former provinces of Kibuye and Gikongoro. Although the situation had improved a bit in 2005, still only 18% of households had at least a mosquito net and only 16% of under fives had slept under a mosquito net the night preceding the survey²⁰. Only 17.4% of children under five years received care from either a health center or from a recognized private clinic when they had fever. The rest either received no care at all or were seen by traditional healers. As a result of implementing a comprehensive package of interventions coverage of malaria control interventions has increased as shown in the graph below comparing DHS 2005 and MIS 2007.

Figure

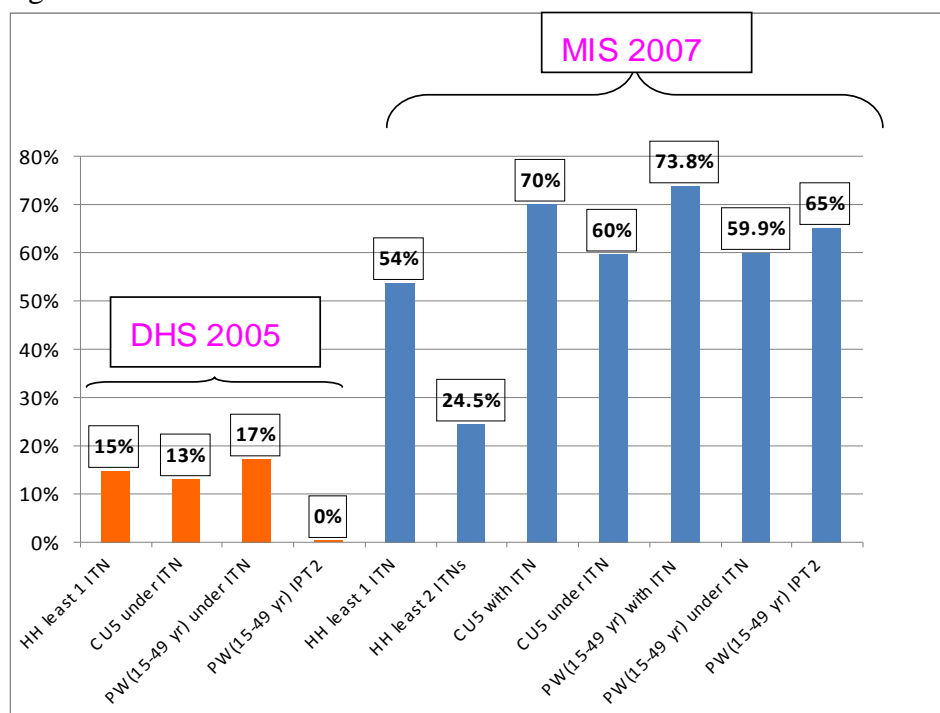
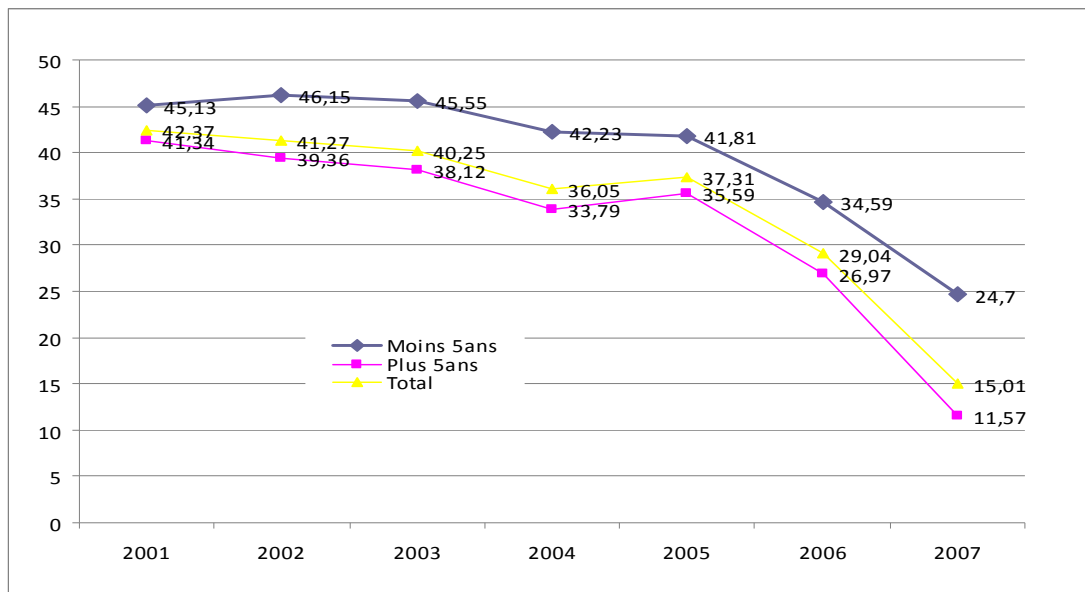
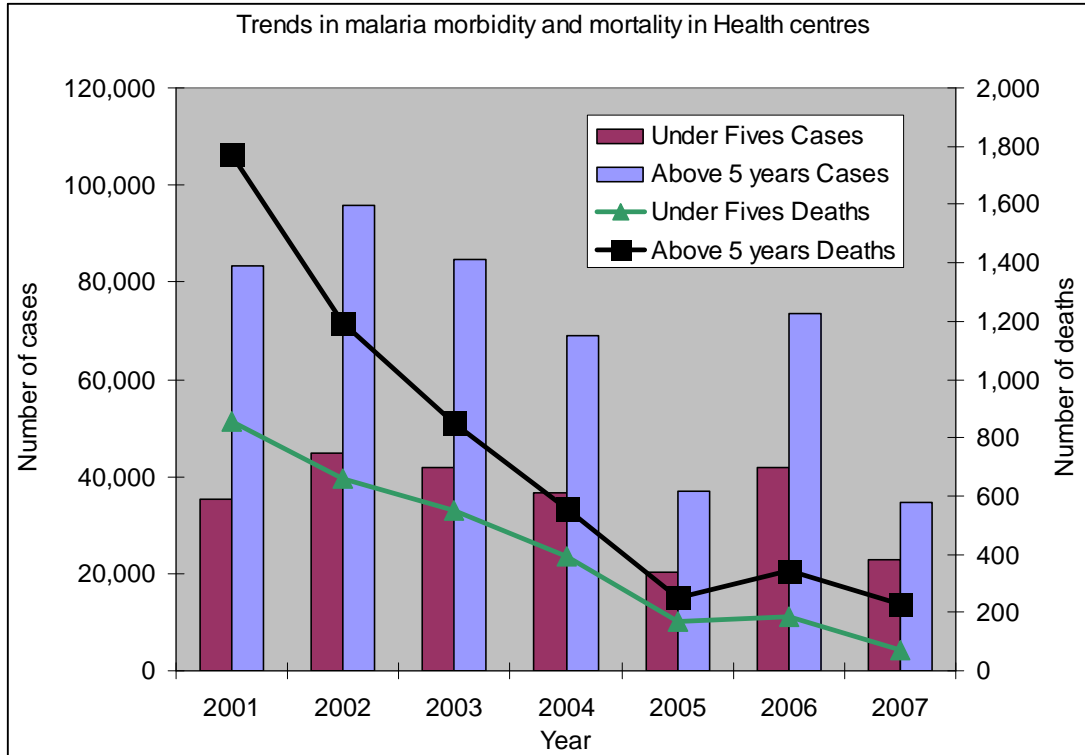


Figure showing trends in the proportional morbidity of malaria in health centers between 2001 and 2007



Increasing utilisation of health services while availing effective drugs that are universally available and affordable resulted into the reduced case fatality rates shown in the two figures, while increased availability of preventive measures reduced malaria related morbidity.

Figure showing trends in malaria morbidity and mortality



7. Conclusion

Effective prevention and management of cases of malaria can result in significant reduction in the malaria related morbidity and mortality in both children and adults. In the case of Rwanda, the reduction was most significant in the children under five years, possibly because these were particularly targeted by the Home based management of malaria and mosquito nets.

The reduction noted in malaria morbidity and mortality is real since it is observed against the background of increased utilization of health services .And lastly, the success of all malaria control interventions depends not only on good technical decisions but on the political will and support, as well as a true partnership between the communities, political authorities and other stakeholders and partners.

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