

**COMMUNITY ACTION TO SUPPORT MALARIA CONTROL IN
TRADITIONAL VILLAGES IN HUONG HOA DISTRICT, QUANG TRI
PROVINCE, VIETNAM**

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SUMMARY

*The Vietnamese government has been implementing a national malaria control program for many years. The program uses several effective strategies but the burden of malaria in poor and remote communities has not yet reduced. The reasons include reluctance on the part of some communities, especially ethnic minorities, to use bed nets and change their customary routines. MCNV supported a community-managed health approach in Huong Hoa, Quang Tri, in which the villagers themselves identified malaria as a health problem and undertook changes to reduce their risk. In this report, the activities of villages in the program are compared with those in villages not involved in the program. **Methodology:** This was a cross-sectional study in combination of quantitative and qualitative methods. Four communes in Huong Hoa district, two with and two without the community-managed health development (CMHD) intervention program were involved in the study. **Results:** Significant differences between the CMHD and non-CMHD communities were found in the levels of new activities undertaken, including negotiation with authorities for additional bednets, the behavior change for reducing risk of malaria, and people's confidence for addressing the malaria problem. In all of these cases, the CMHD communities were more active than the communities receiving only the NMCP interventions. **Conclusions:** The CMHD intervention could empower to change the traditional routines of the people in the mountainous area. CMHD using participatory planning could also lead to an effective health promotion, and better functioning of the existing "vertical" programs.*

1. Introduction

Vietnam has been praised for its successful fight against malaria over the years, reducing morbidity by 60% and mortality by 97% between the peak in 1991 and a decade later. The good results have been maintained through the National Malaria Control Program (NMCP) (Erhart, et al, 2004; Hung et al, 2002; Schuftan, 2000). However, in 2007 Vietnam still had more than almost 15,000 registered cases of malaria and 20 fatalities (WHO Western Pacific Country Profile, 2009). According to the NMCP,

half of these cases, more than 90% of the severe cases and 95% of the deaths occur in the Central Highlands. These areas have been economically attractive for migrants from other endemic areas, thereby maintaining transmission and re-introduction (Erhart A et al, 2005). Vietnam shares borders there with Laos and Cambodia, which are both highly endemic for malaria.

The NMCP is managed by the National Institute for Malariology, Parasitology and Entomology in Hanoi, and operates through a wide network reaching to the villages. The responsibility for the program is divided between the health services, which have to provide good prevention, diagnostic and treatment services, and the community, which has to use the bed nets provided and be actively involved in other prevention measures. One obstacle to successful control in the Central Highland areas was reported to be that villagers did not fully practice the interventions recommended by the NMCP. Another approach was needed, and community-based approaches have proven to be successful in other areas of the world in empowering the people and by that, raising their health status.

In the mountainous district of Huong Hoa in Quang Tri province, the Medical Committee Netherlands-Vietnam (MCNV) introduced a program of community-managed health development (CMHD), aimed at empowering the village people to improve their own health by changing their living conditions. Such a program could supplement the national malaria control strategies for more effective malaria control. CMHD program is a dynamic bottom-up process aimed at improving people's health according to their own perception of their needs, in a way appropriate to their local context. In the CMHD process, the villagers made and implemented their own health development plans, based on their own analysis of their health situation and largely on their own resources. In the CHMD communities, people could weave their horizontal bottom-up planning with the vertical activities supported by the NMCP. Huong Hoa district consists of 20 communities, all of which receive NMCP, while CMHD provided additional support to four of them as pilot communes.

The results of this study demonstrate that empowerment led to change in the traditional routines of the people previously thought to be resistant to change. A community-managed approach could contribute to better functioning of the existing national "vertical" disease control program, and increase the effectiveness of health promotion.

2. Methododology

Four communities in Huong Hoa district, Quang Tri province, were chosen for a comparison, two with the CMHD program and two without it. All four communities received the same inputs from the NMCP. The communities were comparable in the severity of malaria, distance to health services and demographic and socio-economic conditions (Table 1).

Table 8: *Key figures of the selected communities*

Figures	CMHD communities		Non-CMHD communities	
	Thanh	A Tuc	A doi	Thuan
Population	2745	1983	2653	2288
% of poor households	67%	64%	45%	39%
Income per capita (USD)	285	307	315	375
% of malnutrition children under five	48%	38%	38%	41%

Two of the four CMHD communities were selected randomly. Two similar communities in the neighborhood were selected as control groups. All in the selected communes were listed and 2 in each commune chosen by random numberings. All households in the selected villages were asked to complete the questionnaires. Based on a list of all households in the selected villages, random number method was used to select 10 villagers in each village for focus group discussion (FGD). In total, 450 people filled in questionnaires (Thanh 120, A Tuc 90, A Doi 117 and Thuan 123) and 80 people (50% women) participated in FDG. Both men and women were asked to fill in questionnaires. Because many of the villagers are illiterate, the research team went to house to guide the people, also giving them the opportunity to observe all 450 households according to checklists. Additional interviews were conducted with 8 health workers at commune health centers and 4 health officers at district level.

Secondary data were obtained from the NMCP on: numbers of malaria cases per community, numbers of bed nets provided and numbers of bed nets used by people; impregnation of bed nets in all four communities. Other data were collected from the reports of CMHD program and reports of the NMCP.

Data analysis: The data were entered into EPI Info. Data from each group was pooled for comparison using Chi square test.

3. Results

3.1. Household interventions against malaria

Differences in practice of interventions between the CMHD and non-CMHD villages are shown in Table 2. The interventions listed were based on what people planned to change according to their perception of risks. For example, one reason for not using bed nets regularly was the presence of an open fire for cooking and warmth in the middle of the house. Sleeping near the fire is dangerous with a bed net. Families that had already a separate kitchen could use a bed net better. More villagers in CMHD

communities also made a shed, and moved livestock from under the house (on stilts), than did villagers in non-CMHD villages. The rates of impregnating bed nets and spraying were similar in communities with and without CMHD.

Table 2. Household Interventions in CMHD and non-CMHD communities

Household Interventions	CMHD communities		Non-CMHD communities		P value
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	
Use bed nets	207 (99%)	3 (1%)	212 (88%)	58 (12%)	P<0.00
Made separate kitchen, moved fire out of living area	172 (82%)	38 (18%)	158 (66%)	82 (34%)	P<0.00
Made shed, moved cattle or livestock from under house	128 (61%)	82 (39%)	76 (32%)	164 (68%)	P<0.00
Cleared stagnant water or livestock feces near house	177 (84%)	33 (16%)	135 (56%)	105 (44%)	P<0.00

These results show that the households in CMHD communities more often used bed nets, more often moved the fire place out of the living area, more often moved livestock out from under their houses, and more often cleared potential breeding places for mosquito larvae from around their houses. Matching results from the questionnaires and observation checklists revealed no effect of literacy on practice in use of a bed net (data not shown).

3.2. Response to community plans

In the FGD, villagers in CMHD communities said that in the beginning of the CMHD, many of them did not believe in action would be taken. So when their first plan was evaluated, in a participatory way that involved them, they were excited about the results. Villagers expressed that they were much stronger in group than they were as individuals. After the first cycle of planning their village interventions, they had more confidence for the next cycle. One group in A Tuc community reported that they had seen how it worked and had the impression that it could work on other problems.

The district health officers noted that *"leaders of villagers with CMHD programs came to the district authorities at least three times a year to negotiate for*

their village's needs. The district health workers could reduce monitoring visits on the malaria control program to CMHD communities due to the active participation of villagers who had taken responsibility for the village actions."

Both CMHD and non-CMHD villages reported that the NMCP policy of providing one bed net per 2.2 people was not appropriate, because of cultural customs of these communities. They could not afford to buy extra nets. The CMHD communities, however, were empowered enough to negotiate with the NMCP for more bed nets for their households, so they could have sufficient for nearly everyone to sleep under a net.

3.3. How non-CMHD communities addressed malaria problems

Villagers in the FGD in non-CMHD communities said that they felt that the NMCP was successful, but it was not enough. They participated in the implementation when asked by health staff and village leaders. But they saw the neighboring CMHD communities doing more and wanted to follow; however, they were not yet skilled in planning, monitoring and working together as the CMHD communes. The non-CMHD villagers reported that a few of the households had copied good examples from families in CMHD-communities, such as making a separate kitchen and relocating the fire to make the use of bed net safer. We have no data yet on the extent of this copying or its effect on the results in the other sections.

3.4. Community participation and behavior change

Level of participation in controlling malaria

People in CMHD communities appeared to have more control in the development of their community. To check this, a frame-work of five levels of participation (1) making decision and plan, (2) monitoring and evaluation, (3) implementing, (4) contributing labor, material or money, and (5) only benefiting, was applied to measure the participation of people in these four communities in malaria control activities. More people in CMHD communities participated in the highest level (making decisions) compared to those in non-CMHD, while more people in non-CMHD community were at the lowest level of participation. There was a significant difference in participation at the highest and lowest levels between two groups ($p < 0.00$), however there was not much difference in the immediate levels among both groups; 39% of people in CMHD communities reported that they participated in decision making, compared to only 0.4% of people in non-CMHD villages. Only 2.9% of people in CMHD communities reported that they were at the lowest level of participation, compared to 9.2% in non-CMHD communities. From the questionnaires, there was no significant difference between literate and illiterate villagers' participation in malaria control activities.

Higher level of participation, better use of bed nets

The villagers' levels of participation in malaria control appeared to influence their use of bed nets (Figure 1 ($p < 0.00$)). The lowest proportion of bed net use reported in the questionnaires (71%) was found among those whose participation was at the lowest level (passive benefit only); those who participated at the highest level also reported the highest level of bed net use (100%).

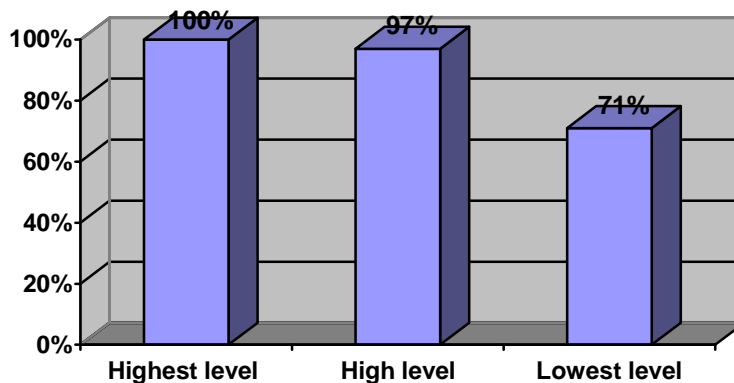


Figure 5. *Relation between villagers' bed net use and level of participation*

3.5. People's perception of change in malaria burden

The perception of people about the seriousness of malaria burden four years ago compared to the present was significantly correlated with the number of interventions taken in both CMHD and non-CMHD communities ($p < 0.02$). In the CMHD communities, 83% of the villagers were convinced that malaria was reduced, while 13% did not know. In the non-CMHD communities, 72% thought that malaria had been reduced, and 23% had no idea. The difference between percentages of people who said the malaria situation was unchanged or had increased was only 4% and 5% in CMHD-communities and non-CMHD communities respectively.

In the FGD, villagers in CMHD communities agreed that malaria and its impact had been reduced in their communities. They said that in previous years, many of them could not work because of malaria but that was no longer the case. Many had had serious fevers for three or four times a year, and in some families two or three members got malaria at the same time. When so many members could not work, their families had food shortages. Now, they said, the number of people getting malaria in families and community was reduced. They could go to work and no longer suffered food shortages. Also, more villagers went to the commune health centers immediately to get treatment if they thought they had malaria. The main malaria problem now was with people who went to work in the forest and did not use bed nets there, or who crossed the border to visit relatives in Laos.

According to the NMCP report of Huong Hoa district, the incidence of malaria in this area in 2006 was higher than in 2005. In the non-CMHD communities, malaria in Thanh community increased from 125 cases in 2005 to 169 in 2006 and in Thuan community, from 82 in 2005 to 89 in 2006. In the CMHD communities, the number of cases in A Tuc decreased from 63 in 2005 to 46 in 2006, but in A Doi there were 84 cases in 2005 and 106 in 2006. During interviews with commune health workers and FGD with district health officers, it was noted that the improved awareness of villagers made them go to a commune health center when they got fever, which can result in an increase in the number of cases recorded at the health services. But, in fact, they thought that the malaria burden was less than it had been in the previous years. Villagers in CMHD communes also reported in the FGD that they used to stay at home or ask magic healers to their home when someone got sick in the past. But now they go to commune health stations for help. These changes did not come up in discussions with villagers in the non-CMHD communities.

4. Discussion

Combating malaria requires active participation of the population at risk; they should collaborate in carrying out a number of preventive measures. People in the CMHD communities had opportunities to make choices about interventions based on their own perception, so that they acted for their own communities. By participating actively in the CMHD process, the villagers changed their behaviors in controlling malaria. The results suggest that higher the level of participation, the better the results of behavior changes. People's participation has already proven to facilitate capacity and sustainability of change efforts, and enhance effectiveness and efficiency of programs and enhance health.

CMHD promoted community participation in bottom-up planning to address health problems, including malaria. The support and the new skills of the community members resulted in empowerment of individuals and their communities. Empowerment contributed to malaria control in Papua New Guinea as well. With CMHD, the people were able to address their priority problems, and to negotiate support with local authorities when needed. Communities gained more confidence after every project cycle of planning, implementing, monitoring and evaluating a project. For example, the villagers in CMHD communities, with their written plans based on their participatory, could claim and obtain more bed nets from the NMCP, because the national standard of 2.2 persons a bed net was not appropriate in their custom. The same problem was identified by an earlier malaria study in Binh Thuan, but no solution was proposed.

Although the NMCP promoted use of bed nets, in the communities that had only the national program, bed net use was 88%. But in the communities where CMHD was practiced and the villagers were involved in the decisions about bed net use, the level

reached 99%. That the lowest rates of bed net use were found in the groups reporting the lowest level of participation reflects the importance of a feeling of control over the interventions. These results suggest that CMHD was an effective way to mobilize the remaining members of the community that were apparently not reached by the national program. While the rate was already high in the non-CMHD communities, it is important that coverage be as high as possible for the bed nets to have maximum effect.

The lack of bed net use was not simple refusal or misuse of the nets. There were good reasons not to use them, especially the presence of a fire in the traditional houses. By working with the villagers to identify this issue and supporting their solutions of building separate kitchens for the fires and using blankets to keep warm, the use of bed nets was increased.

Another study in central Vietnam demonstrated the close link between poverty and malaria. CMHD promotes the health sector and communities to maximize use of resources from national "vertical" programs. When the people take responsibility for some of the actions, such as monitoring bed net use, the health workers can reduce their own monitoring visits and use their time for other essential activities and villages.

Limitations of CMHD

Although 57% of the villagers in the CMHD communities reported that they participated at the highest levels (decision making and planning; monitoring and evaluation), there were still 43% of villagers who felt that they acted only at moderate and low levels. That might be because only one representative of each household among about 40 households was invited to participate in the meetings at the villages. Getting the villagers to be so active takes quite a lot of initial investment in training and coaching, which is mostly done by the local health and other departments. They have to invest first before they can have the benefits later.

In these border communities, the NMCP and the CMHD intervention only in Vietnam may not be effective enough, as long as there is exchange of vectors and people across the border. A similar program has been started across the river in Laos but it will take time to see the results in reduced malaria infections.

Limitations in the study

There might be a bias in comparison between CMHD and non-CMHD communities in controlling malaria. At present, a lot of families in non-CMHD communities did already copy a model of those with a separate kitchen, cattle shed far from house, drying stagnated water, etc. In addition, many villagers in non-CMHD communities joined health promotion activities in CMHD-communities; they then went home and implemented some of the same household interventions. Another issue is recall bias; the people were asked to recall the malaria situation, as well as the process

of CMHD; not everyone could easily recall events that had taken place over many months.

The information about malaria in this study was not collected by clinical examination or laboratory testing. The CMHD process is not aimed specifically at malaria but at community development by the villagers themselves. Malaria control needs more than only more active communities; strengthening the capacity of the health system to provide good diagnosis and treatment is also essential. Using the health system data has many limitations. Besides the usual reasons for a lack of reliability, in these communes along the border with Laos the data are contaminated with cases crossing the border to Vietnam for health care. A study investigating the factors involved in persistent malaria in Quang Tri province noted the need for community education, but also concluded that malaria control will also need strengthening of the health system in the remote areas.

5. Conclusion

The communities with the participatory development process known as CMHD were more actively participating in malaria control activities than those in non-CMHD communes, although both were benefiting from the national control program. Villagers in the CMHD communities participated in the process of planning, decision making, implementation, monitoring and evaluation. They made their own decisions about household interventions and implemented them actively. The results suggest that community participation in decision-making results in additional benefits for health, including malaria control activities.

CMHD can contribute to better functioning of the existing "vertical" programs. The CMHD supported change in the traditional routines of the people in rural areas in Vietnam. CMHD led to a higher level of participation and awareness amongst the ethnic minorities. This level of participation led to empowerment. Consequently, the people were able to recognize their problems, then identify and implement their own solutions, including negotiating additional support from local authorities. The CMHD can be an effective approach to health promotion.

Abbreviations

CMHD: Community-managed health development; FGD: Focus Group Discussion; NMCP: National Malaria Control Program; NIMPE: National Institute for Malariology, Parasitology and Entomology; VHW: Village Health Worker.

REFERENCES

1. Erhart, A., Thang, N.D., Hung, Q.N., Toi, V.L., Hung, X.L., Tuy, Q.T., Cong, D.L., Speybroeck, N., Coosemans, M., and D'Alessandro, U.. *Forest malaria in Vietnam: a*

- challenge for control*. American Journal of Tropical Medicine & Hygiene, (2004), 70(2): (2004), 110-118.
2. Erhart, A., Thang, D.N., Ky, V.P., Tinh, T.T., Overmeir, V.C., Speybroeck, N., Obsomer, V., Hung, X.L., Thuan, K.L., Coosemans, M., and D'alessandro, U.. *Epidemiology of forest malaria in central Vietnam: a large scale cross-sectional survey*. Malaria Journal, (2005), (2005), 4:58.
 3. Fetterman, D.M.. *Empowerment evaluation: building communities of practice and a culture of learning*. American Journal of Community Psychology, (2002), 30(1):89-102
 4. Fitzpatrick J, Ako WY. *Empowering the initiation of a prevention strategy to combat malaria in Papua New Guinea*. Rural and Remote Health 7 (online), 2007: 693. Retrieved (July 22, 2007) from: <http://www.rrh.org.au>.
 5. Hung LQ, de Vries PJ, Giao PT, Nam NV, Tran QB, Chong MT, Quoc NTTA, Thanh TN, Hung LN, Kager PA: *Control of malaria: a successful experience from Viet Nam*. Bull World Health Organ (2002) , 80(8):660-666.
 6. Morrow, M, QA Nguyen, S. Caruana, B. Biggs, Nhan H Doan and Tien T Nong . *Pathways to malaria persistence in remote central Vietnam: a mixed-method study of health care and the community*. BMC Public Health (2009). Available from: <http://www.biomedcentral.com/1471-2458/9/85>.
 7. Nam, V. N., de Vries P.J., Toi, V.L., and Nagelkerke, N.. *Malaria control in Vietnam: the Binh Thuan experience*. Tropical Medicine and International Health, (2005), 10(4):357-365).
 8. Schuftan C: *A story to be shared: The successful fight against malaria in Vietnam*. WHO WPRO, 11/6/2000. Geneva: World Health Organization; (2000).
 9. Thang, ND, A. Erhart, N. Speybroek, Le Xuan Hung, Le Khanh Thuan, Cong Trinh Hung, Pham vanKy, M. Coosemans, U. D'Alessandro *Malaria in central Vietnam: an analysis of risk factors by multivariate analysis and classification tree models*, Malaria Journal, 7:28 doi:10.1186/1475-2875-7-28, (2008).
 10. Thang, ND, A Erhart, LX Hung, LK Than, NX Xa, NN Thanh, PV Ky, M Coosemans, N. Speybroek and U. D'Alessandro *Rapid decrease of malaria morbidity following the introduction of community-based monitoring in a rural area of central Vietnam*, Malaria Journal, 8:3 doi:10.1186/1475-2875-8-3, (2009).