

# **CHAPTER III**

## **Proposal**

### **Information, Education and Communication strategies for the promotion of the use of insecticide treated bed nets for malaria prevention among the people in Nathong Village, Hinheub District, Vientiane Province, Laos.**

#### **3.1 Introduction**

Nathong is one of the villages where there has not been appropriate Information, Education and Communication (IEC) strategies to promote and support the use of Insecticide Treated Bed Nets (ITNs) for malaria prevention which is the reason of malaria incidence rate has not changed and is still high after the program since late 1996. (CIEH, 1994 and IMPE. 1996). ITN programs in many sites in Laos have not been successful and sustainable because people do not use and accept ITNs. According to the report of the Malaria Station, Vientiane Provincial Health Services (MS., VPHS) to the Institute of Malariology Parasitology and Entomology (IMPE), people's lack of knowledge, attitude and practices on malaria and ITNs can cause the non-use of ITNs (IMPE, 1996). They do not know what the causes, symptoms, treatment and prevention are. They think that malaria is caused by ghosts, eating inappropriate food and drinking unboiled or dirty water. Some people have some knowledge on malaria but they do not

and preventive aspects of malaria. Because of unacceptability of ITNs, use of traditional healers and self medication remain the first priority in their health seeking behaviors.

Up till now, the IEC materials that has been produced and distributed in Laos have been inadequately pre-tested before printing. The materials were not based on people's educational level, and were unsuitable for the socio-cultural and economic conditions in the rural areas. They were designed by health staff themselves in their offices without ideas and suggestions from the people. Lack of monitoring and evaluation of IEC materials on ITNs and/or of IEC programs are also the reasons for conducting this study.

Socio-cultural and economic factors may also influence people's attitude and behavior towards malaria prevention. Most of people in the rural areas believe that malaria is cause-by ghosts. They have no experience about the use and also believe that ITNs has side effects, for example, making one feel hot and causing difficulty in breathing while one is under ITNs. These are some reasons for the non-use of ITNs. Therefore, to ensure success and sustainability of the malaria prevention program, a positive behavior change among the people should be promoted and supported through the use of appropriate IEC strategies.

One such model is the PRECEED-PROCEED model which is effective for the success of the health promotion program. PRECEED-PROCEED model was

developed to assist health educators and planners in conducting a study and evaluation of all the factors that influence change in human behavior (Kaplan et al., 1993). For malaria prevention and control, there are many strategies to be used for the success of the program. For example, control mosquito from biting, control, mosquito breeding and killing adult mosquitos. These strategies, health education or IEC is one of the very important methods to increase a positive behavior change, because people's perception will be changed if they know and understand what the disease is, its danger and how it can be prevented (Sornmani and Fungladda, 1991).

The processes of PRECEED-PROCEED model for malaria prevention through developing IEC for behavior change involve decision making on how to increase the use of ITNs for malaria prevention among the people. There are five phases in the PRECEED portion and four phases in the PROCEED portion of this model. Only phase one to four of the PRECEED will be applied to use for this study.

Phase 1 is social diagnosis. A health problem can be investigated by considering the behavioral and non behavioral factors related to its occurrence. Both behaviors will show the people's knowledge, awareness and practice in terms of the use of ITNs and malaria prevention that the cause for high malaria incidence. The purpose of this phase is to identify the problem affecting the people in the village. It means why the malaria incidence is still high after ITNs program implementation. This may be people non use of ITNs due to lack of IEC support. Phase 2 is epidemiological diagnosis. This is related the current concerns and existing problems in the areas. The

main purpose is to collect and identify the factors affecting to the problems. The reason of the issue will be identified and which one is a priority and cause for people have non use ITNs and malaria prevention. Phase 3 is behavioral and organizational diagnosis. The behaviors and organization factors affect and relate to people's use and non-use of ITNs for malaria prevention. For example, people may have never used it so they have no experience. They may think that ITNs have side effects such as feeling hotter than ordinary nets and difficulty in breathing. Environmental factor is also important such as seasonal, climate, temperature etc. which affect malaria. These are existing and/or often beyond the malaria control and health education program. It is also a contributing factor for vectors and parasites breeding of malaria. Therefore, knowledge of behavior and environmental factors are necessary in the development of IEC strategies. This phase shows the reasons for non use and lack of environmental maintenance by people.

Phase 4 includes predisposing, reinforcing and enabling factors. The Predisposing factor is that the individual's behavior can be explained as a function of the characteristics of the individual. This includes demography, health believes and attitudes about diseases etc. (Sornmani and Fungladda, 1991). Enabling factor includes all factors that affect the affordability of people of malaria prevention methods. In ITNs program, the enabling factor is community participation. The community participation can be increased by appropriate IEC by letting them know that it is their problem and they should be responsibility for it themselves. Therefore, health education should be considered to develop IEC for the promotion of the use of ITNs for malaria prevention which is objective of this study.

## **3.2 Background**

### **3.2.1 Information, education and communication**

Information, Education and Communication or health education, is education to enhance the people's knowledge and attitude towards a positive behavioral change, in order to protect themselves from diseases (Dignan and Carr, 1992). People will change their behavior to prevent a disease infection if they know and understand what the disease is and its danger to their health, otherwise they will not change (Kaplan et al., 1993). This is the concept of people's perception to the disease. There are four steps of perception of behavior change for disease prevention: the perception of susceptibility to the disease, perception of the threat of disease, perception of the benefit of action and of the likelihood of behavior change (Kaplan et al., 1993). All the steps of perception are influenced by health education. Therefore, health education and its elements such as sender, message, channel and receiver are very important considerations in the development of IEC strategies for human behavior change for prevention of the diseases especially communicable diseases like malaria.

In developing IEC or health education for human behavior change, three pathways should be considered and related to the components of health education (Lengeler et al., 1996). The first is providing information; people may not know that it is possible to protect their health due to a lack of substantive information, e.g. that malaria can be prevented and that their behavior increases their risk to the disease. But, if the people know that mosquitos carry malaria then they can benefit from changing

their behavior to prevent the diseases. In short, they might need accurate information. The second pathway is changing attitude; knowledge alone can not affect attitude change, e.g. some people know that smoking cigarettes is harmful to their health, but they do not stop smoking. The change in attitude can influence a behavioral change because if people are threatened that they might get disease or death then they will be more likely protect themselves. The third is imparting skill; learning new skills helps people achieve new techniques and methods which may lead to behavior change. For example, people who have skills can practice better than people who have not. For the use of ITNs or malaria prevention, some people have never used it then they do not practice prevention. Therefore, the central consideration for the development health education strategies are examining the existing behavior and its context, and identifying the support needed to change behavior and to overcome the obstacles and to change.

According to the above mentioned, all health programs should therefore be concerned with and supported by appropriate information, education and communication or health education because people will more likely change behavior if they are aware of the disease and its danger. The appropriate IEC should take into consideration of people's life style, knowledge and ability. A particular program supported by inappropriate IEC may not be successful or will have lower effectiveness if people do not accept the program and refuse to participate in it. The messages in IEC or health education should be understandable, acceptable and useful to act on by the local people, considering their educational level and ability for prevention and interrupting disease transmission (Dignan and Carr, 1992).

For malaria control program, the use of insecticide treated bed nets is one of the better control measures with high effectiveness for the prevention and interruption of malaria transmission. This is because malaria mosquitos can not bite the people who are sleeping under the nets and the mosquitos will be also killed when they are exposed to ITNs (Lengeler et al., 1996). Distribution of ITNs alone does not sufficiently encourage people to use them. Hence, the need for IEC support is very important. The field experiences of malaria control and health education programs show that people in rural areas think that ITNs have side effects, is toxic and dangerous to their health when they are inside it and touching it (IMPE and CIEH, 1996). This wrong perception relates to people's behavior for prevention of the disease. Therefore, the health belief model for changing human behavior for malaria prevention needs to be used to change knowledge, attitude and practice of the people in malaria prevention and control (Kaplan et al., 1993).

In the Health Belief Model (HBM): IEC is one of the modifying factors which is necessary and very important for behavior change for ITNs use (Sornmani and Pungladda, 1991). There are four elements of this model: (1) individual's perception of the susceptibility and seriousness of malaria; (2) perception of the threat from malaria; (3) modifying factors, e.g. IEC, demography, sex, age, occupation etc.; and (4) perception of benefit of the use of ITNs for malaria prevention (Dignan and Carr, 1992).

Individual perception of the severity of malaria refers to feelings concerning the seriousness of contracting malaria as well as an evaluation of the consequences from the disease, e.g., fever or death from malaria. When individuals feel that they are at risk of contracting malaria, they may or may not act (use ITNs) to protect themselves depending on whether they know that malaria is severe or can cause death (Lengeler et al., 1996). Only then will they be more likely to protect themselves from the disease. This means that the two factors combined, perception of susceptibility and perception of the severity of malaria influences the individual's likelihood to take a proposed action of the use of ITNs for malaria prevention. Individual perception of the threat of malaria is the consequence of personal perception of susceptibility and severity of malaria because, if people realize the susceptibility and severity of malaria, they will perceive a threat of malaria and start to use ITNs to protect from mosquito bites.

The previously mentioned perceptions are not the only influences to behavioral change for the use of ITNs and malaria prevention. Human behavioral change is also affected by modifying factors such as socio-cultural and economic status, and demographic characteristics (Agypong et al., 1995). Socio-demographic factors such as age, sex, occupation and education are determinants of behavior change for ITNs use and malaria prevention. These factors affect an individual's perception of malaria and the perceived benefit of the proposed methods of malaria prevention. For example, people who have higher education are at less risk for malaria than people who are illiterate because they understand prevention better.



Perceived benefits of the proposed action refers to the individual's beliefs regarding malaria prevention. The acceptance of susceptibility to malaria and use of ITNs is related to behavior and depends on negative or positive effects of the consequences after the action, e.g. people will use ITNs if they know that they can prevent malaria. But, they may not use it if they think that ITNs have negative side effects. The direction that one takes is thought to be influenced by beliefs regarding the relative effectiveness of known and available alternatives in reducing malaria through the use of ITNs. To encourage the use of ITNs for malaria prevention, therefore, the people's perception of malaria on both preventive and curative aspects and modifying factors should be identified so as to design and discover ways to increase people's knowledge, attitudes and practices for the prevention of malaria through appropriate IEC strategies.

### **3.2.2 Insecticide treated bed nets in Laos**

Insecticide Treated Bed Nets have been used for the prevention of malaria transmission in many countries, with high effectiveness shown in China, Cambodia, Malaysia, Gambia, Kenya, and other parts of Africa (WHO, 1996). In the first randomized controlled trial of ITNs in Africa it was reported that the of malaria mortality in children aged 1-4 years old was reduced by 63% by ITNs. Because, the children were protected by the use of ITNs during their sleep, which is a time when there is greater exposure to mosquito bites (Alonso et al., 1991). Most study documents showed that there was about a 20-63% (medium 45%) reduction of malaria incidence rates in Africa with the introduction of ITNs (Lengeler et al., 1996).

ITNs has been used for malaria prevention in Laos since 1988 in some provinces such as Luang Prabang, Vientiane, Bolikhamxay, Savanaket, Saravane and Sekong. The Institute of Malariology, Parasitology and Entomology is an organization responsible for this program. The program has been supported by the Lao Government, international agencies and NGOs. Permetrin was, for the most part, selected for impregnation. Between 1988 to 1992 they were distributed to the population in the following provinces (table 3.1).

**Table 3.1 ITNs distribution during 1988-1992, Laos**

Year	Total population	Province	*Population	Number of ITNs
1988-89	145,000	Bolikhamxay	1.362	454
1989	640,000	Savanaket	2.015	656
1990	339,000	Luang Prabang	1.080	457
1991	312,000	Vientiane	944	291
1991-92	58,000	Sekong	556	169
1991-92	211,000	Saravane	17.679	4,130

Sources: Institute of Malariology, Parasitology and Entomology, 1996

\*Population-theoretical (based upon family size) utilizing the ITNs

In the second national malaria meeting in early 1994, ITNs were suggested to be one of the strategies for the malaria control program, because there was high effectiveness along with DDT residual spraying. Reports from the people showed that not only mosquitos were killed but other insects as well. Since then the malaria control program has been decentralized to other provinces. The numbers of ITN and population covered have been increased in the whole country (table 3.2) (IMPE, 1996). The target group for the distribution of the ITNs was people who are at risk of malaria

in the north and south of the country. Despite the Government's efforts to promote the use of ITNs, the budget was also the obstacle and limiting factor of the program. Lack of participation of people in the use of ITNs and the unaffordability of the impregnation by the low income earners are also problems.

**Table 3.2: ITNs distribution during 1994-1996 in Laos**

Year	Total Population	Province	* Population	Number of ITNs
1996	396,100	Vientiane	2,700	1,850
1994-96	169,100	Bolikhamxay	2,850	2,159
1994-96	270,300	Xieng Kuang	95,115	6,120
1994-96	377,000	Luang Prabang	41,209	4,519
1994-96	264,800	Saravane	1,884	314

Sources: Institute of Malariology, Parasitology and Entomology, 1996

\*Population-theoretical (based upon family size) utilizing the ITNs

### 3.2.3 General information about the study area

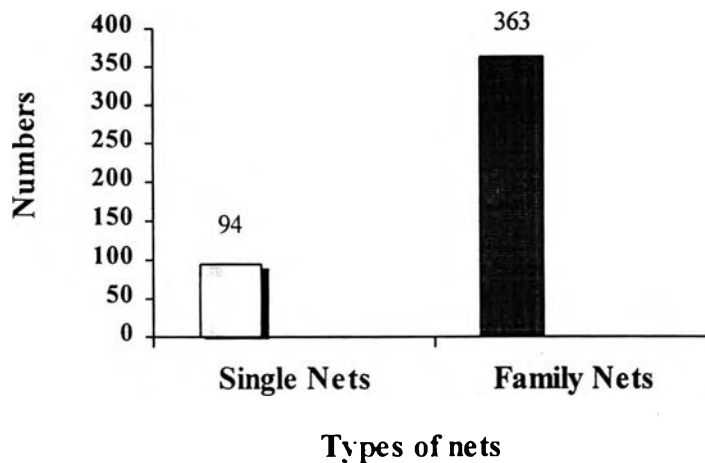
Nathong Village is located at Hinheub District, Vientiane Province, 150 km north from Vientiane Municipality on road No: 13. Before 1995, Nathong Village was under the Pholhong District, Vientiane Province. There are 3 ethnic groups in this village: 75% Lao Lum, 10% Lao Therng and 15% Lao Sung. The total population is 1,188, includes 636 females and 552 males. There are 273 households and 281 families. The Major occupation is farming. This village is a plain area, covered by forests and small river. The climate is hot and humid due to the forest and the rainy season is in May to September of the year (National Statistic Center, 1996).

In Nathong Village, there is a Government Health Post located in the centre of the village to provide the health services to people. There is a former health worker who had resigned since 1992, but, he has still provided health services to people in this village when they get sick. During his work with Government at the district hospital, he was not a malaria field staff. Therefore, his scientific knowledge about malaria may not be much. There are 2 small informal pharmacies and a clinic providing treatment and drugs to the villagers. There is one primary school class.

#### **3.2.4 ITNs distribution**

According to the report of MS., VPHS was shown high incidence rate of malaria in Nathong Village. The study of ITNs needed was held to find out the quantity, and then 94 single ITNs and 363 family ITNs were distributed to a total population of 1,188 persons in 273 households of this village. All the nets were impregnated by Permetrin insecticide. The total distributed could cover the total population in this village. Free distribution was given to poor families and a small amount of money was charged to those families who could afford to pay (Figure 3.1). The funding of this program was supported by Lao-Olyset agency of the Japanese Government.

**Figure 3.1: ITNs distribution in Nathong Village for 273 families, 1996**



**Sources:** Lao-Olyset malaria control project, 1996

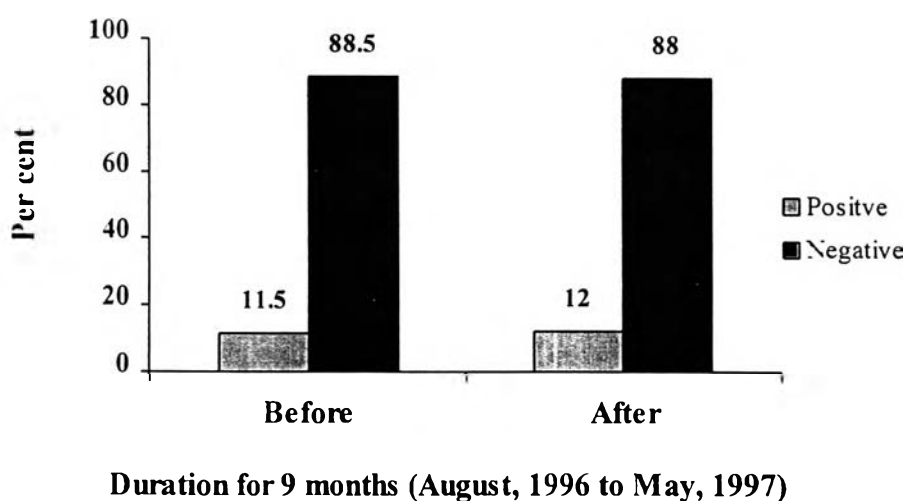
### 3.2.5 Malaria situation before and after ITNs

The report from the Malaria Station, Vientiane Provincial Health Services (MS., VPHS) showed that, an average of 80% of total patients from Nathong Village who come to the health post and district hospital were diagnosed with malaria. Of all of these people, about 30-40% had a positive blood smear examination showing malaria parasites (MS., VPHS, 1996). With reference to this figure, the MS., VPHS assumed that the entire population in Nathong Village were at risk of malaria and there is high incidences of malaria (MS., VPHS, 1996). According to the report, in early 1996, ITNs were suggested as a strategy for malaria prevention and control in Nathong Village; this involved the co-operation between the IMPE, MS., VPHS and Lao-Olyset Project of the Japanese Government.

Before the distribution of ITNs, on August 12-20, 1996 malaria staff at IMPE who were responsible for the ITN program had investigated malaria cases by blood smear examinations. 740 people out of the total population of 1,188 in this village were selected by simple random sampling technique. Blood smear examinations showed that 11.5% had positive and 88.5% had negative results of malaria parasites (graph 3.2).

Nine months into the project implementation on May 1997, blood smear examinations were done again with the same target population. The results showed that 12% of the total number whose blood was taken had positive results for malaria parasites and 88% had negative results (Figure 3.2). According to the above results of the blood smear examination, IMPE had reported that the malaria situation in Nathong Village has not changed after the introduction of the ITNs.

**Figure 3.2: Blood examination results of malaria cases detected before and after the introduction of ITNs program in Nathong Village**



(Sources: IMPE, 1996)

According to the results in graph 3.1, the malaria situation in Nathong Village could therefore be concluded that the incidence of malaria has not changed in comparison between before and after ITNs were distributed (IMPE Assessment Team, 1996). This situation has occurred in many places of ITNs programs in Laos. There are two main factors for the increase in malaria incidences: the first factor is health services and the second is community people (CIEH, 1996). Health services relate to the technical staff, duration for impregnation of the nets and health education activities. Some staff who are responsible for the ITNs program do not have experience on impregnation of the nets. In health education activities, IEC for the promotion of use of ITNs is inadequate for all ITN programs in the country. It is also inappropriate because the IEC materials are not based upon of people's educational and perception levels. About 75% of the total population in rural areas only have primary school education. Lack of IEC materials and inadequate pre-testing before printing are the main problems according to the lack of success of ITNs program (CIEH, 1996). The community people factor, Lao people, especially those who live in rural areas are more at risk of contracting malaria because of socio-cultural and economic status, traditional beliefs and lack of knowledge and awareness about malaria. These factors contribute to the fact that the community people do not accept, participate and sustain the ITN programs in Laos.

In the ITNs program, the need for health education of the population has been identified as the most significant factor in the level of practice. For example, the relationship between the use of ITNs and knowledge on the danger of malaria and the

importance of ITNs (WHO, 1997). According to the Health Belief Model was explained, the knowledge is a necessary precondition of health education for behavioral change (Dignan, 1992). Before, behavioral change is likely to occur, people must have the knowledge both about their risk factors and the way in which these risk factors can be reduced. Without such knowledge people are unlikely to engage in the process that can ultimately lead to behavioral change. A change of Attitude will come after knowledge is gained about the disease because attitude is shaped from knowledge and awareness. Therefore, IEC messages should be designed to facilitate positive feelings such as those relating to ITNs having no side effects, malaria not being caused by ghosts and that it can be prevented (Maibach and Parrott, 1995). The practices show that people will change behavior if they get correct, appropriate and useful messages (Kaplan et al., 1993). People will not accept or do what is not necessary. For example, earning money and working in the field are accepted as necessary activities for rural people, over other activities.

Therefore, I hope that the data and information collected on the socio-cultural and economic, knowledge and attitude, human behavior and IEC perception aspects, which relates to malaria transmission will be useful for the development of appropriate IEC strategies to promote the use of ITNs for malaria prevention in Laos.

### **3.3 Problem statement**

Basically, there are two different approaches to control malaria (WHO, 1993):



- a) The management of malaria cases in the community, and
- b) Active intervention to control or interrupt malaria transmission with community participation.

The first is related to the curative aspect and the second is related to the preventive aspect. The Curative aspect such as treatment of malaria cases with drugs alone can not interrupt malaria transmission (Park, 1994). The way to reduce the transmission of malaria in a community is to use preventive measures. The concept of preventive measures is to interrupt man-vector contact (WHO, Tech. Rep. Ser. 839, 1993). The recommended measures to reduce man-vector contact are vector control and individual or family protection (Park, 1994). Vector control involves:

- 1) Anti-mosquito measures such as residual insecticide spraying and space spraying.
- 2) Anti-larval measure such as destruction of mosquito larvae by insecticides, source reduction of mosquitoes sites through drying or flushing (Gilles and Warrell, 1993).
- 3) Individual and family protection, including mosquito repellents, coils, ITNs, nets, and protective screening of windows, and doors (Gill and Warrell, 1993).

For the curative aspect, the focus is on disease management such as diagnosis of cases. This is dependent on the capacity and experiences of malaria staff at the different levels; provincial, district and village levels. The staff lack skills in disease

management because they are not trained on the new methodology and technique of diagnosis and treatment. In addition, there is a lack of materials and supplies for diagnosis and treatment, for example, microscopes and drugs. Most of diagnosis of malaria cases have been based on clinical examination rather than microscopic examination except at the central, provincial and some district sites. The practice of use self medication, delays in going to the hospital and the presentation of severe cases raised problems relating to diagnosis, treatment and drug resistance.

The IEC and human behavioral factors influence both the above mentioned curative and preventive aspects but the influence is greater on the preventive aspect. For the adoption of those preventive measures, community acceptance and change in human behavior are essential. Without community participation and good perception about malaria, the control would not be successful. Therefore, appropriate IEC for changing human behavior should be identified by health educators of health education programs and volunteer health workers of malaria control programs before making a decision to devise any of the above control measures.

At present, in Nathong Village, epidemiological information such as annual parasite incidence, annual blood examination rate, types of vectors and parasites are not available (Lao-Olyset, IMPE, 1996). However, information on the socio-cultural and economic aspects of the village, such as occupation, forced movement, irrigation and agricultural practices, and general housing conditions, are not available (MS., VPHS, 1996). Similarly, information on human behavior such as taking care of personal and

family protection from mosquitos bite and nuisances, treatment seeking behavior when suffering from fever or malaria, maintenance of physical environment; housing conditions, screening etc. are unknown. Information on people's perception of existing IEC in terms of comprehension, acceptance, attractiveness, inducement and involvement are not available in the Center of Information and Education for Health. Therefore, this study proposes to collect this basic and important information in order to develop appropriate IEC strategies for the promotion of the use of ITNs for malaria prevention that might enhance the people's use of ITNs and change their behavior for protection from malaria.

To find out the data and information of the above mentioned aspects. The main research question of this study will be “*How could IEC strategies increase the use of ITNs for malaria prevention among the people in Nathong Village, Laos?*” And, to gain more information, subquestions were developed in the questionnaire guidelines e.g. What are the factors contributing to people not using ITNs? What are the people’s knowledge, attitude and practice and the socio-cultural, economic and political factors that resulted in an unchanged malaria incidence rate after ITNs were introduced in Nathong Village? What are the health services and the levels of understanding of people towards existing IEC materials? etc. (detail in Appendices 1, 2, 3 and 4).

The results of this study will be useful for planning and decision making by the trainers, health educators and volunteer health workers at the central, regional, provincial and district levels who are working on malaria control. The information will

provide them a basis for devising suitable control measures to interrupt malaria transmission there. The information will help them to know what would be the people's acceptance towards ITNs. Similarly, it will tell us when and how frequent supervision and monitoring activities should be actively carried out for the case detection, management and health education campaign. It will also assist in identifying what is appropriate and the period to develop appropriate IEC strategies and to conduct health education on asking community people to take part in protective measures such as use of ITNs, protective clothing and screening of doors, windows and openings in houses.

### **3.4 Objectives**

#### **3.4.1 General Objective**

The general objective of this study is to identify the information with particular reference to the use of ITNs and malaria prevention for developing IEC strategies to promote the use of ITNs and malaria prevention among the people in Nathong Village, Vientiane Province, Laos.

#### **3.4.2 Specific objectives**

(1). To identify the elements of perception and human behavior with particular reference to malaria transmission and ITNs use, that is:

- (a) Knowledge and attitude of malaria and the use of ITNs for prevention.
- (b) Treatment seeking behavior if suffering from fever or malaria

(c) Personal and family protective behavior against mosquito nuisance and bites.

(2). To determine the perception of the people in Nathong Village towards existing IEC materials for malaria prevention in terms of comprehension, acceptance, attractiveness, involvement, inducement to action and to obtain their suggestions for changing these materials.

(3). To determine the socio-cultural and economic factors in Nathong Village with respect to malaria transmission.

## **3.5 Methodology**

### **3.5.1 Conceptual framework of the study**

The conceptual framework (Figure 3.3) developed here describes the relationship between human behavior, socio-cultural and economic and IEC aspects with respect to ITNs use and malaria transmission. The arrow lines show the inter-relationship. The extent of malaria transmission depends on those factors mentioned above. Similarly, the frequency and chance of exposure (man-vector contact) depends on the change in human behavior (Kaplan et al., 1993). The change of behavior for treatment and prevention of diseases is influenced by knowledge and attitude. If people have (new) knowledge and attitudes they will be aware and change to the correct behavior to prevent disease. This knowledge and attitude can be acquired through IEC

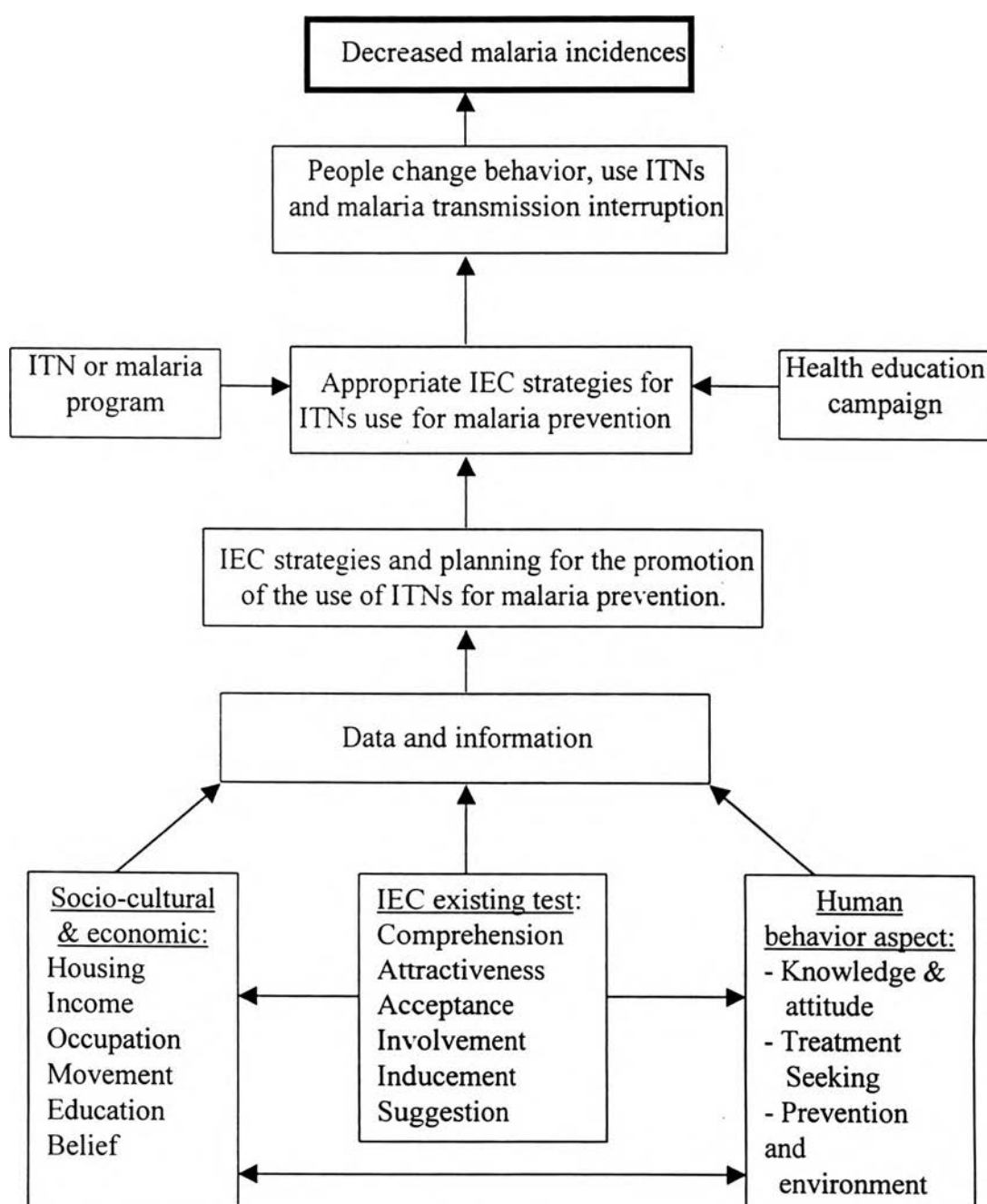
promotion; therefore appropriate IEC to promote ITNs use can result in better knowledge and attitudes of the people, which in turn will be useful for human behavior change and increase the use of ITNs for malaria prevention (Maibach and Parrott, 1995).

Socio-cultural and economic aspects such as income, housing conditions, environment, education, occupation, movement and beliefs are some elements which are considered to be conducive factors for malaria transmission. The level of income determines the ability to pay for health services. Traditional beliefs and low education influence the people's perception of disease prevention. This is a very important consideration for IEC strategies, planning and design. IEC for the promotion of the use of ITNs for malaria prevention will be more effective if they are suited to people's educational level. IEC also influences human behavior in both the curative and preventive aspects of malaria. If those messages have more meaning, are attractive, and are appropriate to people's socio-cultural, economic and based on educational level, people can apply the messages and act to prevent malaria (Basic HealthCom, 1996). Therefore, I hope that the elements of all aspects of information requirement (Figure 3.1) can be used for developing appropriate IEC strategies for the promotion of the use of ITNs for malaria prevention at Nathong Village in Laos.

In the Figure 3.1: the arrow lines indicating upward from the bottom to the top of the framework show the information aspect requirements and processes of the study. The horizontal bi-directional arrow lines show interrelationship between those aspects

and components which contribute to malaria and the success of the program. The horizontal left and right directed arrow lines indicate those aspects are influenced by IEC.

**Figure 3.3:** Relationship between socio-cultural and economic, existing IEC and human behavior aspects which influences malaria transmission and the information need for developing IEC strategies to promote the use of ITNs for malaria prevention.



**Sources:** Adapted from Dignan and Carr, 1992 Program and planning for health education and promotion and Kaplan et al., 1993. Health and human behavior

### **3.5.2 Study design**

The proposed study will be a cross sectional study used for exploratory purposes. The survey research is probably the best method available to the social scientist interested in collecting original data for describing a population too large to observe (Babbie, 1995). A cross sectional survey is a study in which all data are collected at more or less at the same point in time (Agyepong et al., 1995 and Kaewsonthi and Harding, 1992). There is no directionally, whether forward or backward in time. Cross sectional study is usually used to describe the situation for non-intervention study.

The purpose of an exploratory study is to find some clues to explain a condition which exists (Rogers and Rogers, 1976). The study proposed will seek to determine people's perception and the use of ITNs for malaria prevention. There is a perceived malaria problem but the nature of the problem simply is not known and there is no prevention by people. The study will focus on the explanation of human behavior and existing IEC perception that relate to the transmission of malaria among Nathong Villagers. The study outcomes will serve as a step in developing IEC strategies for the promotion of the use of ITNs for malaria prevention in Laos. Appropriate for this study will be both qualitative and quantitative approaches.



In the process of developing IEC strategies, a meeting will be conducted to discuss the results of the study. To get more ideas and suggestions for the development of the IEC strategies, the participants will be the Malaria Control Committee which includes health education staff, malaria staff, program designer, people in community and others who have concerned about malaria control activities. The meeting will have three sessions. The research results will be presented in the first session. The second session will be a discussion and comparison between the research results and previous information of people's perception and behavior based upon information from MS., VPHS and IMPE. The third will be proposed planning and design based upon the villagers' knowledge and suggestions. There are many IEC strategies to increase the use of ITNs and change human behavior for malaria prevention; for example: health education campaign. developing capability of volunteer health worker by training, use of IEC materials etc. All of these strategies will be considered and must include the concepts noted below (Basic HealthCom, 1996):

(1). Feasible behavior change: People should use ITNs, wherever they sleep or in the places where malaria mosquitos can bite. They should maintain a hygienic environment in their house, and eliminate mosquito breeding places (e.g. uncovered water containers and drainage). They should go to the health center or hospital if suffering from fever or malaria.

(2). Product: IEC materials such as posters, leaflets, videos or cassette tapes or campaigns etc., will be produced based on villager's knowledge and suggestions which are more useful and acceptable by the people.

(3). Services: To increase knowledge and human behavioral change, ITNs or IEC program should be integrated with each other. This is because distribution of ITNs only or giving IEC alone can not develop a positive change in human behavior for the use of ITNs or malaria prevention, e.g. some people have knowledge about malaria and its danger but do not practice prevention.

(4). Price: As the cost of ITNs is expensive, most people in rural areas who are at risk of malaria can not afford the ITNs. Cost of distribution is also high. If the Government pays it should also provide IEC to support ITNs, otherwise failure and unsustainability of the ITNs program may occur. The IEC should focus on increasing knowledge and practice, eg. how to use the ITNs.

(5). Place: The message will be delivered where people can get information on malaria prevention and use of ITNs, such as from volunteer health workers, community leaders or mobile teams etc. For treatment, villagers should go to the health post or hospital if suffering from fever or malaria.

Beside the above mentioned five concepts for developing IEC strategies and production, the selection of an appropriate communication channel is also important. An even more important thing is pre-testing before printing, as this would allow the messages to be changed and improved if there are any misunderstandings or suggestions by the people.

### 3.5.3 Data collection techniques

To get more information and collect data, the four techniques for information collection below will be used for the study:

- Household surveys.
- Focus group discussions
- Observation checklists
- Review of secondary data

Multiple techniques as mentioned above will be utilized in the study to obtain deeper understanding of situations and identify the most required information. Lao language will be used in the interviews in all the techniques with the help of questionnaire guidelines. I believe that these techniques can gather as much relevant and important information as required to fulfill the objectives of the study. The household survey will be done to determine the perception of people, socio-cultural and economic status and ITNs use in quantitative approach. Focus group discussion and observation checklist will be used to determine the human behavior, IEC perception of the people and socio-cultural and economic status in general with qualitative approach. I hope that based upon the information collected through the four techniques, IEC strategies for the promotion of the use of ITNs for malaria prevention will be developed and that would solve the malaria problem in Nathong Village and in other villages where there are similar situations as in Nathong.

## **1. Household surveys**

The objective of this technique is to determine the people's perception, socio-cultural and economic status and the use of ITNs for malaria prevention. To collect the required and relevant data, representatives of households will be surveyed. Household surveys are often used to collect information from house to house based upon questionnaire guidelines which are developed on particular topics (Agyepong et al., 1995). Data and information from this technique could describe the number of people who live in a family, occupation, education, religion, gender, knowledge and awareness on malaria, etc. The interpersonal interview format will be used for this technique. Representatives are those people who are able to provide more information about the local situation, knowledge, attitude and practice for malaria prevention such as adults; males, females, mother, father, grandmother, grandfather in each household. They will be interviewed by interviewers according to the questionnaire guidelines.

The questionnaire guidelines of this technique were developed based on required data and information in quantitative. They are closed questions. These guidelines will allow the researchers to obtain deeper and more detailed information on elements of general information, basic malaria information, treatment seeking behavior and prevention of malaria by the villagers with respect to malaria transmission and prevailing problems (see Appendix 1).

## **2. Focus group discussions**

To get more in-depth information on knowledge, attitude and practice on malaria and on ITNs use, as well as on IEC perception for malaria prevention, and in order to compare the responses from the household survey, which may be not enough for developing IEC strategies for planning, focus group discussion will be organized to determine opinions and ideas of people about the above variables. The main purpose of focus groups is to collect information on areas that the researcher does not know much about or to explain the range of attitudes, beliefs and opinions about the particular topic (Agyepong et al., 1995). This technique is done by asking open-ended questions to the participants and letting them come up with as many ideas and suggestions as possible which regard malaria and the use of ITNs.

Participants will be asked and guided by a moderator with open-ended questions. For example, questions will be asked regarding people's knowledge, attitude and practice in relation to cause, symptoms, treatment-seeking behavior and prevention as well as the use of ITNs for malaria prevention. In focus group discussions, existing IEC materials for malaria prevention such as brochures, posters, flip charts and manuals will be also tested to find out what works or how much the people understand in terms of comprehension, attractiveness, acceptance, involvement and inducement for action. The group will be guided by a moderator, he or she will be assisted by one note taker and one observer of the process during the discussions. A tape recorder will be used to record the discussion.

The questionnaire guideline for focus group discussions was separated into three parts, i.e. general information, treatment seeking behavior and prevention of malaria. These guidelines are qualitative in nature, with open-ended questions to the audience to get as many ideas from them as possible. The questionnaire guidelines for testing existing IEC materials in terms of comprehension, attractiveness, acceptance, involvement, inducement to act and suggestions for changes by participants was also included (see Appendix 2).

### **3. Observation checklist**

The study aim to identify and collect information on a local situation, which is observable. Some information about malaria prevention could be collected by observing and other technique, therefore the collection information will be observation checklist of the study area. The observation checklist will be done by a research team through the rapid assessment method. Observations will help one to understand the real human behavior, house and village conditions that are largely unknown (hidden) or complex. It will also help to understand processes, events, norms, values and social context of an area (TDR/SER/RP/94.2, 1994). Observation will also help to complement the finding of other techniques of information collection. What is said in household surveys and focus group discussions could be confirmed by seeing during the observation.

Observation will also cover those problems which are not specifically discussed or are overlooked by key informants and may confirm or contradict the information

provided by them (Annetl and Rifkin, 1995). Observations will be conducted following the interviews with house members. Important observations will be discussed with them again in case of omission of any information or to confirm or deny information obtained during the first round of the households surveys and focus group discussions (Annetl and Rifkin, 1995).

Broadly, observations will be conducted based upon the guideline of the observation checklist (see Appendix 3). It will be done during house to house visits to look at the determinant of malaria, for example, the physical environment, waste disposal, housing conditions, agricultural practice, occupation, migration pattern, health service, educational opportunity, real behavior or living practices, human behavior of malaria prevention.

#### **4. Review of secondary data**

The relevant information on malaria and the use of ITNs in the village will be collected by purposeful scanning through the review of different documents and secondary data published or available from various sources (Annett and Rifkin, 1995). The sources may be from the records of the Ministry of Public Health, CIEH, IMPE, Malaria Station of Vientiane Provincial Health Services, Phol Hong District Health Services and Health Post, which relates to health problems and facilities, housing conditions, environment sanitation, population and others services related to the malaria situation.

For the purpose of the collection of required information a document review will be collected based upon guidelines such as information about the population of the village, distribution patterns of the population within village. Similarly, efforts to collect information about the major ethnic groups, their occupation, people mortality and migration will also be attempted. Information about the average household size, average income of people within village, average dependent size and numbers of households in the community will also be collected. Efforts will also be directed towards finding those documents which can reveal the past records of malaria and about the local environment. e.g. climate, rainfall, humidity, temperature (see Appendix 4).

**Table 3.3: Summary of information requirements**

<b>Information on</b>	<b>Why it is important</b>	<b>How it may be used</b>
<b>1. Host (human)</b>		
Population	Indicates the total number of people at risk	To plan IEC materials and ITNs distribution, health education and to plan health facilities.
Distribution	Indicates accessibility of people, urban and rural environment	To determine the type of surveillance and malaria control activities required
Occupation	Indicates risk of acquiring malaria e.g. farming, fishing, hunting wood cutting etc.	To find out who needs to know more about malaria and control activities required
Morbidity	Increases possibility of epidemic with movement of cattle herders, travel from urban to rural areas, labor movement with development project, dams refugees etc.	To plan control activities. To allocate resources where they are most needed
Type of dwellings and location in relation to breeding sites	Open dwellings are difficult to spray. Different ones need different net designs. Proximity of breeding sites increases risk	Helps to determine appropriate vector control measures



<b>Information on</b>	<b>Why it is important</b>	<b>How it may be used</b>
Income levels	Ability to buy health care, protection measures, quality of dwelling	To design cost-effective but equitable system of health care supply (e.g. treatment, ITNs)
Night time behavior	If the people are outdoors during the mosquito biting time, their risk of infection is higher	To protect children by suggesting when they should be indoor and using nets or ITNs.
Treatment seeking behavior	Influence on the access to early and effective diagnosis and treatment	To identify barriers to obtaining early diagnosis and treatment. To determine information needs of community and of health care providers.
Environment maintenance	Poor maintenance of canals or drainage can create breeding sites	To determine information needs of the community
Personal protection activities	Reduce mosquito-human contact (number of bites) so reduce transmission	To determine materials & information required
Community protection activities	Indicates community's concern about malaria	To support community efforts to arrange accessible health care, finance, nets or ITNs, and to reduce breeding sites
<b>2. Disease</b>		
Endemicity	Determine the type of control activities needed	To make a plan of control measures
Morbidity	Help determine the scope of the problem & impact on the community	To plan health facilities
Mortality	Help determine the scope of the problem & impact on the community	To plan health facility, to access the quality of health care and needs for training & improvement
Sex distribution	Show who is more risk, where transmission occurs & immune status of population	If mainly males, may be occupational, if pregnant women they should focus on control efforts
<b>3. Vectors &amp; parasites</b>		
Species	Different species have different behavior	Influence mosquito control strategy
Preferred breeding sites	Indicates which water bodies are important & larvae	Help to decide which control methods to use

	control is feasible	
Resting and biting habits	Spraying & ITNs may be more effective against bite	Help to decide which control methods to use
Seasonal density change	Affects seasonal pattern of disease	To determine content of communication & timing of control activities
<b>4. Environment</b>		
Climate, rainfall, surface water, temperature.	Affect suitable for transmission	Determines mosquito control strategy & prediction of outbreaks
<b>5. Control activities (by community and health services)</b>		
Types of health care	Public health services, private, NGOs etc.	To provide the best access for all affected people to early effective diagnosis, treatment and prevention. To determine content of communication
Types of mosquito control	Different mosquito use different control: dose & kinds of methods	To determine types of communication
Personal protection	Indicates acceptable and availability of repellents. ITNs, coils etc.	To build on current practices & make them more effective

Sources: Adapted from WHO, 1997. Partnership for change and communication guidelines for malaria control

### 3.5.4 Population Study

The population of this study includes all people who are living in Nathong Village, Hinheab District, Vientiane Province, Lao PDR. With a total population of 1,188 (636 females and 552 males), 273 households and 281 families, Nathong Village, Hinheab District, Vientiane Province will fall within the framework of this study.

### 3.5.5 Sample size and sampling technique

#### 1. Sample size:

There are four techniques of data collection appropriate for this study. The different techniques have different sampling:

For household surveys, about 163 representatives will be needed for the interviews they will be selected from the total 273, households by using the Yamane formula. The Yamane formula is important and suitable for selection of sample size for cross sectional study (Sample size= $400 \frac{N}{399-N}$ ), where N= household numbers and 400 and 399 are the constants) (Boontuam, 1997). An additional 10% will be added as a correction factor, the total sample will be 179.3. But, for convenience in the collection of information the sample will be taken as 180 or about 65.8% out of the total households in the village (1 representative from each household). The representative will be the most responsible adult in the households who is more than 15 years old (males or females, mother or father or grandmother or grandfather) because these people may give more information and have the power to teach their young children and other people.

For the observation checklist, the purpose sampling of this technique will be all those factors influencing malaria transmission. About 30 households out of the total, 273 household will be selected by probably sampling. The inside of each household what will be observed such as bedrooms, screening of windows and doors, bed poles, mosquito nets or ITNs. The outside the house, and the surrounding village will be

observed for the cleanliness, water collection, forest fringe, breeding sites, garbage, domestic pets, etc. Health facilities and services are also included in this observation.

For focus group discussions, there will be 3 separate groups: a group of males, a group of females (who are aged over 15 years old) and group of volunteer health workers and/or community leaders. These groups of people may give more ideas and suggestions during the discussions. They are also the persons who take care of the young people or children and have the power to teach others about malaria prevention in the family or in the village. Each group will involve 6-8 participants with similar characteristics or background such as age, gender, education, marital status and occupation. A suitable time and comfortable place will be arranged for the discussion. Having the discussion in the evening will be better than in the afternoon because people have to work in their field during the day. A quiet place will be better for the discussion than a noisy one.

A Review of secondary data will be done to find out as much as possible about available documents, services statistic and reports which are related to malaria and the use of ITNs at different levels. The available places for these data will be the MoPH, IMPE, CIEH and MS, VPHS and Health Post.

## **2. Sampling technique :**

For the household survey, the sample size will be selected by sample random sampling technique because all households in Nathong Village have already had been

given ITNs from IMPE in early 1996 (IMPE, 1996). The Random sampling technique is the selection of the number of study units from a defined status population (Agyepong et al., 1995). The sample size will be selected from the total number of households in the village by the research team. Firstly, a list of the total household numbers from the head of the village will be gathered and put in the box. And then, the sample size will be selected. After that, interviewers responsible for that particular household will visit and request a representative of the household to be interviewed. About 180 representatives will be selected by using the Yamane formula.

Focus group discussion will be done and participants selected by purposive sampling with the co-operation of the head of the village, his team and the research team. The qualifications required of participants will be proposed to the head of the village and his team. Then, the selection of the participants will be started based on the list of qualifications. The selection will be done at the head of the village's house or village office. After that, participants will be called by the head of the village or his team to attend the group discussion at a previously agreed time and place.

For the observation purpose, area probability sampling technique will be adopted to obtain the number of households to be observed. There are at present 273 households in Nathong Village. From the total household number, about 10 percent will be taken as sample for observation, which will be 27.3 in numbers. According 10 percent of 27.3 houses to raise the degree of accuracy, the total numbers of houses to be sampled will be 29.6. But, for the convenience in the collection of information the

sample will be taken as 30. The selection will be first done by obtaining a list of households and a map from the head of the village or committee. In the case of unavailability of a map and list of households, the research team will prepare mapping of the community by using Participatory Rural Appraisal technique (PRA) with the head of the village and his team. PRA is a tool and process of data collection with community participation, mobilization, learning, exchanging ideas and using materials which are appropriate and available in the village for problem solving (Chambers, 1992). In the map, the group of households will be separated into three parts: north, central and south. And then, the sample size will be selected according to the list and zones. There will be 30 households, ten households from each zone. Then, the interviewer will carry out the observation based on the questionnaire guidelines and information needed.

### **3.6 Data and information management and analysis**

The information received from all data collection techniques, be they in the form of statements, opinions or descriptions, will be analyzed by the following procedure:

For the household surveys, all data collected will be keyed into the computer in EPI-INFO (Version 6.0) or SPSS. Then, it will be analyzed to find out the result according to the objectives and variables of the study such as general information, basic malaria information, treatment-seeking behavior and the prevention of malaria.

For the focus group discussions, all the information and responses from participants which were recorded by the moderator, note taker, observer and tape recorder will be classified and summarized in group categories. And, it will be written up based on the group of variables in the questionnaire guideline general information, basic information on malaria, treatment seeking behavior and prevention of malaria. Similarly, the responses, perception and suggestion of participants on existing IEC materials tested for malaria prevention will be also summarized based on the sources of information, comprehension, attractiveness, acceptance, involvement and inducement to act. After all the information has been classified, the main ideas and suggestions from the participants which relate to developing IEC strategies for the promotion of the use of ITNs for malaria prevention will be discussed and interpreted in the next step.

For observation checklist, all observations on situation, conditions and behavior of the people in the village which influence malaria transmission will be summarized and calculated according to guidelines such as the number of house with bed nets or ITNs, screens on windows, doors etc. Similarly, the figures and any statistics scanned from reports, documents and services statistic at each level will be also summarized for next step of interpretation.

Finally, the findings, any discrepancies or similarities of the research results or any deviations found in comparison with previous surveys, studies or data, will be discussed and interpreted. The survey results will then be written up in a report, containing suggestions for interventions, and forwarded to the Government.

### **3.7 Action plan and timetable**

The total duration of this study will be 3 months (90 days), starting with preparation and ending with the report writing of the research results. It will be undertaken between October and December of the year because this period is not the rainy season (which often causes transportation problems) and is not the period for field work of rural people in Laos. The total working days will be about 70 days because 20 days are holidays. About 2 weeks of preparation, introduction, discussion and orientation of the project theme and research activities will be held for the research team. This will be conducted by the coordinator and researcher who are responsible for the project. At the same time, materials, supplies and venues will be contacted.

Interviews for the household surveys will be conducted by researchers with every representative in each selected house. 20 days will be spent on the interviews by three researchers. Every day after completing the interviews, the response to each question in the forms will be checked and coded into computer code boxes in the same form. This is to ensure that missing data or mistakes are noted and re-interviews done if necessary.

Observation of house and village conditions will be done for over three days by the research members, based on set guidelines and general conditions. It will be divided into two time periods; the first will be done in the day time and the second at night, because during the day one can not see the people using bed nets, while at night this



behavior may be observed. A total of 30 households will be observed and ten households will be observed each day.

Focus group discussions will be done in the late afternoon or in the evening. People in the village are usually in the field during the day. They will be back at their houses in the late afternoon and will be relaxing in the evening. Hence, to get more information and good participation from the people who live in the village or rural areas, late afternoons and evenings will be considered a suitable time for focus group discussion. Three days will be spent for this technique, one day for each group. It will be facilitated by the moderator, assisted by a note taker and an observer. A Tape recorder will be used to record the discussion. Three groups will be organized, each group will include 6-8 participants of groups of males, females and volunteer health workers

For the review of secondary data, 10 days will be spent on collecting all necessary data and information from documents, reports and services statistic in different units, offices and related departments at every level. It will be done by the coordinator or researcher in cooperation with the Directors and staff responsible for malaria programs and IEC programs in those offices. Data and information from the village office, Health Post, MS., VPHS, IMPE, CIEH and others will be scanned if available.

The results of the research will be presented to the Health Education Committee for Malaria Control at the meeting in January 1999 to plan for IEC strategies, which is

the next step of this study. In the meeting, the design of IEC strategies and planning will be discussed based on the research outcomes. Production of health education materials to support the health education campaign for malaria prevention and the use of ITNs will be started in late January 1999. As a follow-up to the study, a health education campaign and evaluation will be proposed in the next proposal to the Lao Government in the middle of the year 2000. The results and outcomes of this research will be used for the evaluation. The same population, target groups, data collection techniques and questionnaire guidelines will be used for the evaluation of the knowledge and attitude on malaria and ITNs use, perception of IEC, human behavior change and socio-cultural and economic factors relating to malaria.

**Table 3.4: Action plan and timetable in 1999**

Time	Oct.	Nov.	Dec.	Jan.
Activities				
1. Team, activities, materials and venue preparation.	—			
2. Data collection : <ul style="list-style-type: none"> <li>• Household survey</li> <li>• Focus group discussions</li> <li>• Observation checklist</li> <li>• Review of secondary data</li> </ul>	—	—		
3. Data management: <ul style="list-style-type: none"> <li>• Key in to computer, classification and analysis, interpretation of findings, report writing and submission to Government</li> </ul>			—	
4. IEC strategies planning, design and Production				—

### 3.8 Budget and manpower requirements

The estimated budget needed is about US\$ 10,615. This is a tentative figure based on the present trend of payment in Laos. This amount will be spent on preparation, research activities, data management, and the production of health education materials. Human resources or research staff for this research project will be selected based on the qualifications and abilities, which are related to this research topic. They may be staff from CIEH, IMPE, MS., VPHS and VHW at the village. Short training will be organized for the researchers before the start of field activities.

**Table 3.5: Budget requirements**

<b>Items</b>	<b>Estimated budget in US \$</b>
1. Preparation	500
2. For the research:	
• transportation	800
• food and accommodation	2,450
• materials and supplies	450
3. Data management	1,200
4. Meeting for planning of IEC strategies and design	500
5. IEC materials production	3,750
6. Miscellaneous for 10%	965
<b>Total</b>	<b>10,115</b>

### 3.9 Expected outcomes

After completion of this study, the results of the research will show the real situation and condition in Nathong Village with regards to malaria in particular the malaria situation, ITNs usage, knowledge and attitude, human-behavior change, socio-cultural and economic status and perception of existing IEC materials. It will be very useful for the malaria control program and health education program in the development new appropriate IEC strategies and planning to promote the use of ITNs for malaria prevention in the future in Laos. The malaria staff, health educators at each level, malaria volunteer health workers and volunteer health communicators in the village will have appropriate IEC that are compatible with the knowledge, literacy, learning ability of the people, and which the people can apply in their lives to prevent malaria and to stay healthy.

As this research is the first study of the Center of Information and Education for Health where I am working now. The Director, staff and I hope that it will be a very useful comparison to subsequent research results especially in regard to human behavioral change about malaria through developing IEC strategies to promote the use of ITNs in Laos. Furthermore, a decrease in malaria morbidity and mortality is also expected. In turn, this would reduce the expenditure of the Lao Government, which has been spending a lot of money malaria control each year in the country.

### **3.10 Ethical issues**

This study aims to identify the perception of IEC and malaria, human behavior, socio-cultural and economic aspects of malaria transmission among the people in Nathong Village, for the purpose of developing appropriate IEC strategies to promote the use of ITNs. The task of the research team is to interview and observe those aspects affecting malaria transmission but not to hurt and harass people. Unethical procedures and violation of people's right and dignity will be avoided. Interviewees in the household survey and participants in the focus group discussion will not be forced to answer questions. Consent of a participant will be sought. Any answer received from participants will not be used against them at any cost.

Similarly, observation of households and household survey will be done only upon the receipt of permission from household head or elder members, especially for the night observations. Only information relating to malaria will be noted. During the observations, anything that is deemed private in the participant's lives will not be revealed without their permission.

### **3.11 Limitations**

There are many control measures for malaria such as disease management and active intervention to interrupt malaria transmission. But, this study will examine only the perception of the people of IEC, human behavior and socio-cultural and economic factors in Nathong Village.

The findings of this study can not be generalized to other malaria areas. This is because there are different socio-cultural factors, elements of human behavior and environmental conditions in each area. Only some areas which are similar to Nathong Village can use the outcome from this research. As this is the first study of the Center of Information and Education for Health the investigator's lack of experience may well be an obstacle and limitation during the study. Additionally, the lack of and inadequate evidence and secondary data may also be a serious limitation in this study.

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