

LIIMCO

**LOCAL
INITIATIVES FOR
INTEGRATED
MALARIA
CONTROL**

**COMMUNITY TOOLS FOR
LOCAL INITIATIVES FOR INTEGRATED
MALARIA CONTROL**

March 2003

ABBREVIATIONS

CORPs	Community Owned Resource Persons
CHMT	Council Health Management Team
DFID	Department for International Development
GDP	Gross Domestic Product
HMIS	Health Management Information System
IDWE	Infectious Diseases Week Ending
IEC	Information, Education, Communication
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Net (mosquito net treated with specially formulated insecticide)
IPT	Intermittent Preventive Treatment
LIIMCO	Local Initiatives for Integrated Malaria Control, a project managed by NMCP and supported by DFID
MSD	Medical Stores Department, supplying drugs and medical supplies to Districts
Ngao	Social marketing brand name of the special insecticide sold for home treatment of mosquito nets under the SMITN Project. Ngao is Swahili for “shield”
NMCP	National Malaria Control Programme
PRA	Participatory Rural Appraisal
SMARTNET	Strategic Social Marketing for Expanding the Commercial Market for ITNs in Tanzania; a Ministry of Health project managed by Population Services International and funded by DFID and the Royal Netherlands Embassy
SMITN	Social Marketing of Insecticide Treated Nets; a project managed by Population Services International and funded by DFID
TBA	Traditional Birth Attendant
WTT	Ward Training Team

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COMMUNITY TOOLS FOR LOCAL INITIATIVES FOR INTEGRATED MALARIA CONTROL

Assembled for district malaria coordinators, district training teams and ward training teams by the LIIMCO project of the National Malaria Control Programme, Tanzania.

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1 INTRODUCTION

In all Districts of Tanzania, malaria is the most frequent diagnosis for outpatients. It is the most frequent reason for admission to hospital, and the leading cause of death. Malaria accounts for 20% of all life-years lost. It is responsible for 45% of the disease burden for children under 5, and for 16-20% of hospital deaths among under-5s.

Human cost: 34.5 million people are at risk of malaria in Tanzania. There are approximately 16 million cases of malaria each year resulting in 70,000 to 125,000 malaria deaths .

The economic cost: Approximately TSh 65 billion is spent on both preventing and treating malaria in Tanzania.. This is just under 1.1% of the Gross Domestic Product of the country.

What action can be taken to control malaria, reduce suffering, death and economic loss?

Experience has taught us that there are no magic bullets for controlling malaria. It is not realistic to try to kill all the mosquitoes. However, communities can use several weapons against the many factors that contribute to malaria, and can shift the balance between the illness and the people in favour of the people.

This document describes five broad strategies (tools) that communities can use for combating malaria, with specific activities for each strategy. They have been discussed and tried in Mbarali, Same, Kyela and Chunya with support from the LIIMCO project .

Why these initiatives ?

- Within each district, the malaria situation varies because of many factors (such as water sources, highlands or lowlands, population density, and differences in occupations and income).
- An initiative that is possible in one place may not be a good idea somewhere else, because of differences in local circumstances. Communities in the catchment area of a single health facility may differ in ways that are significant for controlling malaria.
- Multiple actions are needed to reduce illness from malaria.
- Each possible action requires something of the community.
- It is unrealistic to expect all communities to undertake all possible actions.
- Therefore communities themselves should choose which initiatives they are going to undertake. They should take ownership of their local initiatives by setting their own priorities.

The District Malaria Coordinator should fill the role of advisor to the ward level resource persons, enabling the ward teams to be the advisers to the communities. He should provide information about the technical details of the initiatives now available, and he should encourage the communities in implementing their chosen initiatives. This document is intended to help the district and ward teams to assist communities in identifying which malaria control initiatives are most suitable and feasible for the local situation.

2 STARTING A DISCUSSION ABOUT CONTROLLING MALARIA

Even though malaria is the leading cause of disease and death in Tanzania, it has not been given as high a priority as some other diseases. This may be because the problem has many dimensions and cannot be solved by a single intervention. When starting to discuss malaria control with ward leaders and community members it is important to make sure that everyone agrees what the facts are about the local situation. People often remember only the most extreme cases of illness or unsuccessful treatment or drug side effects, but these cases may in reality be rare and unusual. For some of the interventions described below, it will be important to build up an accurate picture of the community's circumstances as the basis for setting priorities in the local choice of initiatives to combat malaria.

Here are some useful opening questions for starting an open-ended discussion, with follow-up questions:

Is malaria a problem for people here?

From this opening question you can find out whether it is a year round problem or if there are seasonal peaks.

What are the circumstances that make people decide to go for treatment (e.g. is it a more serious case than usual? a young child? a pregnant woman?).

Where do they go, how long does it take to get there, what is the cost of transport?

Are drugs available and what do they cost?

Is the treatment effective?

Remember that sources of treatment can include the formal health service (dispensary, health centre, hospital) and traditional healers as well as pharmacies and small shops.

Do people self-treat? What do they do? Is it effective? safe?

Do shopkeepers sell treatment for malaria?

Which anti-malarial drugs are on sale, and what course of treatment (number of tablets) does the shop sell?

Are people confident of the quality of advice and treatments that shopkeepers are providing?

Has the problem of malaria changed from what it was 10 or 20 years ago?

This may lead to a discussion of changes in the environment from changing weather patterns, population movement, human activities and use of the land, such as mining, brick-making, irrigation for crops or livestock, different types of crops being grown. People may also want to discuss the problem of drug resistance.

Has this community ever experienced an unusually high number of malaria cases compared with previous seasons? What were the causes?

Are mosquitoes a nuisance here?

All year round? Only at some times in the year? (If only some times, in which seasons are the mosquitoes a nuisance or a problem?)

What do people do to reduce the nuisance of mosquitoes?

How much money are people spending on the methods mentioned (e.g. burning leaves or bark, coils, sprays, repellent such as Vaseline or other chemicals)?

Are these methods effective?

Do people here use mosquito nets?

How many households have a net (very few? the better off families? Most of them? - If they are not sure and you are working with a group, ask round the group one at a time if there is a net in their house).

Who is most likely to be sleeping under the net or nets? Try to find out if it is the children or the adults who sleep under a net?

From where did the net users buy or get their nets? Commercial sector (shops, traders, market) or a special scheme or project?

How much did the nets cost?

What is the price of a net in the nearest market or shop where they are sold?

Has anyone heard of special insecticide used for treating the net? If so, from where did they hear about it?

Do people know where they can buy the Ngao net treatment kits?

Has anyone in this community ever used a treated net?

From where did they get the treated net? How much did it cost? Has the net ever been retreated?

Distinguish between mass dipping that may be provided by a hospital, and home treatment (e.g. Ngao).

Do people here take anti-malarial drugs to prevent malaria?

The answer may be that certain people (e.g. pregnant women) are advised to do so, but for various reasons they do not.

The answers that people give to these questions will provide some local context, providing guidance for proceeding with discussions about the initiatives that communities can take for controlling malaria.

Questions are based on *Partnerships for Change and Communication: Guidelines for Malaria Control*. S. Mehra, WHO and Malaria Consortium, 1995).

3 TOOLS FOR CONTROLLING MALARIA

District health staff from the six LIIMCO Districts have discussed and crafted the approach described in this document. The tools also fit very well alongside the new Malaria Medium Term Strategic Plan and the Roll Back Malaria partnership policies.

The main tools are:

- Correct management of malaria cases (Chapter 4)
- Use of anti-malarial drugs for protection, especially IPT (Chapter 5)
- Use of mosquito nets treated with insecticide [ITNs] (Chapter 6)
- Source reduction (Chapter 7)
- Epidemic control (Chapter 8)

For communities with the income levels found in the LIIMCO Districts, the most cost-effective of these interventions is improvement in case management, followed by insecticide treatment of mosquito nets if nets are already in use, followed by Intermittent Preventive Treatment (IPT) for pregnant women, followed by ways of increasing the availability of Insecticide Treated Nets (if nets are not already widely available). Unless there is already a strong infrastructure for household spraying IRS is a relatively unattractive option and is not presented as a feasible tool. Source reduction may be cheap but it is also unattractive because of it is not very effective. Some of the breeding sites might be eliminated but the vectors are so efficient that unless virtually all possible sites are destroyed transmission will continue.

The following chapters describe each tool in detail, and suggest some approaches that might be suitable for implementing these initiatives at the grass roots.

Although the tools or strategies are presented in separate chapters, we should remember that they are inter-linked. For example:

- Correct case management should connect with epidemic control through prompt awareness of unusual increases in the number of cases.
- Source reduction and use of insecticide treated nets are connected because when the insecticide on the nets kills mosquitoes, they are prevented from breeding.
- Effective prophylaxis reduces the seriousness of malaria cases, making successful treatment easier.

4 CORRECT MANAGEMENT OF MALARIA CASES

Ward level officers and members of the community will recognise malaria as a familiar and major cause of disease and death. However, they may not be fully aware that the extent of the problem is made worse by many factors unrelated to the mosquitoes and the parasites.

Factors which make malaria morbidity and mortality worse:

- incorrect assessment of the problem within the household, especially for young children (e.g., symptoms not recognised as being associated with malaria)
- delay in seeking medical attention
- diagnosis made too long after onset of illness
- incorrect diagnosis from health worker
- incorrect advice from seller of medicines
- treatment started too long after the onset of illness
- inappropriate treatment - from any source, including self-treatment
- increasing drug resistance
- insufficient follow-up in cases where treatment is not effective
- an increase in areas experiencing epidemics

Community members may have explanations or reasons for each of these factors. For example, delay in seeking medical attention may be more common after the 20th of the month because people assume that the drug supplies will be finished.

First, discuss with the community what are the reasons for each factor. This participatory assessment will point the way to the most appropriate local initiatives for addressing the specific reasons for the factors that contribute to incorrect case management in this community.

Some examples of reasons underlying the factors are suggested in the chart on the next three pages, with some appropriate initiatives for addressing the problem. All of the suggested initiatives have the objective of improving case management in two ways:

- Early detection.
- Rapid and effective treatment.

Table 4 Initiatives for addressing factors that hinder correct case management - 4.d to 4.f

	Factors hindering case management	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
4.a	Household members assess the problem incorrectly	<p>Person has had malaria before and decides how to treat the current illness.</p> <p>Previous treatment for malaria did not cure the illness.</p> <p>Carer decides that certain symptoms in young children are not symptoms of malaria</p> <p>Household decides that it cannot afford treatment.</p>	<p>IEC on the importance of completing treatment for each episode of illness, and the connection with drug resistance</p> <p>IEC on drug resistance</p> <p>IEC on all possible signs and symptoms of malaria including the cause of convulsions</p> <p>IEC on the social and economic costs of malaria, and setting priorities for use of financial resources</p>
4.b	Patient or carer delays seeking medical attention	<p>The reasons for (a) might apply, plus:</p> <p>Difficulties in reaching medical care are weighed against the individual's assessment of the seriousness of this malaria episode</p> <p>Household (patient, carer or decision maker) is not willing to pay the costs of medical care unless this malaria episode becomes serious</p>	<p>IEC on the costs of malaria, and setting priorities for use of resources, PLUS community initiatives for improving access to medical care</p> <p>IEC on the cost of prompt treatment compared with the cost and difficulty of treating serious cases</p>
4.c	Diagnosis is made too late	<p>Patient presents himself/herself late for treatment (see 4.a and 4.b)</p> <p>Health services are not available locally - find out exactly why; for example: staff on leave; or post not filled; staff waiting for analysis of blood slide; health facility is inaccessible at certain seasons</p>	<p>Use the type of IEC that is most appropriate for the circumstances</p> <p>The most appropriate depend on the precise problem for this community. These initiatives may include training village health workers, gaining support from ward and district officers to solve problems at a health facility, and so on.</p>

Table 4 Initiatives for addressing factors that hinder correct case management - 4.d to 4.f

	Factors hindering case management	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
4.d	Diagnosis from health worker is not correct	<p>Patient's symptoms are unclear</p> <p>Health worker's skills are inadequate</p> <p>Analysis of blood slides is not available, or results arrive too late to be used for diagnosis</p>	<p>Use case review to clarify diagnostic procedures</p> <p>Build skills through peer training, supportive supervision, guidelines on effective case management and referral</p> <p>Improve diagnostic facilities (lab staff, equipment, supplies, flow of work, feedback of results)</p>
4.e	Advice from shopkeepers selling medicines is not correct	<p>Customers ask shopkeeper for favourite medicine</p> <p>Shopkeeper recommends inappropriate drugs</p> <p>Shopkeeper fails to advise on correct course of treatment (under-dosing)</p>	<p>All of the IEC under 4.a, for households</p> <p>IEC specially designed for shop owners and everyone who sells medicines that customers may ask for in cases of self-diagnosed malaria</p> <p>Promote the use of prescriptions from qualified health staff</p>
4.f	Treatment starts too late	<p>Patient presents himself/herself for treatment late (see 4.a and 4.b)</p> <p>Diagnosis is made too late (see 4.c)</p> <p>Drug treatment does not start immediately</p> <p>Drugs are not available in health facility or patients/carers are asked to pay too much at health facilities because of cost sharing or cost recovery</p> <p>Drugs are not available in local pharmacies</p>	<p>See 4.a and 4.b above</p> <p>See 4.c above</p> <p>Health staff can observe that the patient takes the first dose; especially important for young children.</p> <p>IEC for households on completing course of drugs.</p> <p>With DHMT, improve drug supply to health facility</p> <p>IEC for shop owners about suitable anti-malarial drugs</p>

Table 4 Initiatives for addressing factors that hinder correct case management - 4.g to 4.j

	Factors hindering case management	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
4.g	Inappropriate treatment 1) by patient (self-treatment) or carer 2) from shops or pharmacies 3) from health facilities	Patient or carer decides how to treat the illness Sellers of medicine sell wrong drugs or incomplete course of treatment Wrong diagnosis (see 4.d) Correct drugs are not available in health facility	IEC on correct and complete treatment (see (a)) IEC for households on completing course of drugs IEC designed for shop owners and everyone who sells anti-malaria drugs See 4.d With DHMT, improve drug supply to health facility Promote the use of prescriptions from qualified health staff, and IEC for shop owners about suitable anti-malarial drugs
4.h	Increasing resistance of malaria to drugs	Adaptability of the parasite to ensure its own survival Incorrect use of anti-malaria drugs (e.g.), resulting in a weakening of their effectiveness	DHMT to co-ordinate with Region and NMCP on monitoring the status of resistance See 4.g for each group (patients, shopkeepers and health staff) that may be involved
4.i	Insufficient follow-up in cases where treatment is not effective	Patient does not return to the original source of treatment to give feedback Health staff lack the resources to follow up individual patients	IEC for patients on the importance of giving feedback to health staff (and shop keepers?) if treatment is not effective Develop community resources (the CORPs) to assist with following up cases in the community
4.j	Increase in areas experiencing epidemics	Changes in the environment and in human behaviour (see Chapter 8)	IEC for raising awareness of the importance of early warning about possible epidemics (see Chapter 8)

5 ANTI-MALARIAL DRUGS FOR PROTECTION

There are three main groups of people who can benefit from taking anti-malarial drugs in order to protect themselves or prevent the dangerous effects of malaria:

- **Pregnant women**
- **Children with sickle cell disease**
- **Travellers without immunity**

Pregnant women. Health workers who have contact with pregnant women should advise their clients to take at least two full **Sufadoxine / Pyrimethamine (SP)** malaria treatments during their pregnancy. This form of protection is called **Intermittent Preventive Treatment (IPT)**. There is a lot of evidence that taking treatment to prevent the bad effects of infection in pregnancy works well but many pregnant women still do not take IPT. One full treatment of three (3) SP tablets should be taken at the start of the second trimester and another treatment of three (3) SP tablets at the start of the third trimester. If a mother has an allergy to SP or sulpha drugs she should obviously not take SP. IPT does not prevent infection but it kills any parasites that may be in the body, especially in the placenta of the pregnant woman, preventing the harmful effects of infection. **This is an important and effective form of prevention.**

Sickle cell disease. It is less easy to identify sickle cell disease but these children may benefit from regular antimalarial drugs. They are at risk because an episode of malaria is likely to make them dangerously anaemic. For children with sickle cell disease the idea is to make sure that no parasites can grow if they are injected by a mosquito. For the present, until a more effective drug is available for chemoprophylaxis, weekly chloroquine is recommended at a dose of 5mgbase/kg body weight. A prescription from a doctor will be needed to get chloroquine as it has been withdrawn from general use for malaria because it is no longer very effective for treatment.

Travellers without immunity. Travellers will not have the same priority for all communities. Places like the highlands, that have people who travel between areas where there is little or no malaria to areas where many people are infected, like the lowlands and around lake areas, may consider that chemoprophylaxis is important for those who travel. Generally, however, chemoprophylaxis for travellers is expensive and it may be difficult to find the drugs that work well. Taking your own ITN with you when you travel may be a better form of protection.

Identifying the reasons why, for example, a pregnant woman does not follow the health worker's advice will help to make IEC more relevant to the women's circumstances. Targeted IEC is more likely to convince vulnerable people about the benefits of reducing the seriousness of malaria.

Several of the examples in the right-hand column of the table are linked with initiatives in other chapters. This reflects the fact that initiatives need to be integrated.

Table 5 Initiatives for addressing factors that hinder the use of effective chemoprophylaxis

	Factors hindering use of chemoprophylaxis	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
5.a	Many women are unwilling to take drugs during pregnancy	Belief that drugs may causes abortion Drugs may cause an allergic reaction, itching	IEC that it is the malaria that causes the abortion; give appropriate information about the damage to the woman and her unborn child caused by malaria IEC on feedback to health worker if allergy occurs. Guidelines from NMCP on alternative prophylaxis IEC on costs compared with benefits to a pregnant woman and her unborn child. Link with the benefits of using ITNS (see Chapter 6)
5.b	People with sickle cell may be unwilling to take chloroquine Sickle cell patients may not have been identified	Possible allergic reactions Insufficient chloroquine in the drug kit Health service lacks the resources needed to identify everyone with sickle cell	IEC as in 5.a. IEC on benefits of reducing the seriousness of the illness, and of using ITNs (see Chapter 6) Information for health workers on clinical signs of sickle cell, and giving effective IEC to sickle cell patients
5.c	Non-immune travellers may not be fully aware of the risks of contracting malaria	The disease is well known but recent changes in patterns of malaria are not fully appreciated	IEC on recent changes in malaria, and on its social and economic costs compared with the benefits of prevention and control. Link with epidemic control (see Chapter 8) Link with use of ITNs (see Chapter 7)

6 USE OF MOSQUITO NETS TREATED WITH INSECTICIDE

People are generally aware that mosquito nets provide personal protection against the nuisance of mosquitoes (noise and biting) and against illnesses that mosquitoes may be carrying. Users of mosquito nets know that if the net is torn, the mosquitoes easily find their way inside. In some districts, few people have experienced sleeping under a mosquito net treated with special insecticide formulated for public health use (insecticides such as Ngao, Iconet® and Fendona®)

Treatment with insecticide increases a net's protection in three ways:

- The insecticide kills the mosquitoes that land on it; this effect lasts for 6 months against the Anopheles mosquitoes that carry malaria. The insecticide also kills *Culex* mosquitoes (for 2 to 3 months) and other insects (lice, bedbugs).
- the number of mosquitoes carrying diseases are reduced, making a contribution to controlling the vector for malaria
- the repellent effect of the insecticide means that fewer mosquitoes enter a room where a treated net is in use, so others sleeping in the room but outside the net receive fewer bites.

Studies in Tanzania and elsewhere in Africa have shown that when young children sleep under insecticide treated nets (ITNs) the under five year child mortality rate falls substantially. In Ifakara a 27% reduction in all cause mortality was seen in young children sleeping under an Insecticide Treated Net. The more people in a community that use an ITN, the greater the protection for everybody.

Initiatives to increase the use of treated nets must recognise the differences between nets and insecticide.

Nets are widely available in shops, mostly in towns but also in rural areas	The insecticide for home treatment is still not widely available in shops.
Even if people do not own a net they usually know about them	Relatively few people have heard of the insecticide for treating nets or used it
The net is a “consumer durable”, an investment that is relatively costly to buy	One treatment with insecticide is not expensive – cheaper than drugs for malaria.
A net has very low maintenance (running) costs.	Net treatment has to be repeated at least twice per year.

Communities can do a lot to encourage entrepreneurs to sell nets at low profit. The sale of ITNs can be increased through many routes: the private sector (shops, markets, street hawkers), the public sector (DHMTs, health centres, dispensaries, hospitals), mission hospitals, non-government organisations (NGOs), schools, women's groups, agricultural organisations, religious and political groups. Remember that the effectiveness of ITNs depends upon net owners retreating their nets regularly and sleeping under them every night.

Table 6 Initiatives for addressing factors that hinder the use of mosquito nets treated with insecticide

	Factors hindering effective use of insecticide treated nets	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
6.a	Too few households own a mosquito net	Cost of buying a mosquito net is thought to be too high	IEC to raise the priority of ITNs, comparing cost of treatment and lost earnings with the cost of prevention Encourage entrepreneurs to realise that there is a big market for ITNs so they should stock nets/insecticide kits
6.b	People do not know about the beneficial effects of ITNs	Treated nets have often not been widely available The special public health formulation of insecticide for treating mosquito nets is not generally available People's experience of other insecticides makes them fear breathing insecticide fumes every night	IEC on the benefits of ITNs Create demand through word-of-mouth promotion by community members who have used ITNs Liaison with DHMT, Region and SMARTNET to plan and implement distribution of insecticide for home treatment of nets IEC about the special insecticide used for treating mosquito nets (see SMARTNET promotional material for answers to frequently asked questions)
6.c	People may not wish to use a mosquito net, or a net treated with insecticide	A good night's sleep may interfere with married life or Less nuisance of mosquitoes may lead to increased birth rate White or pastel nets may be impractical (get dirty) so re-treatment has to be done more often Fear of the effect of the insecticide on humans	Raise awareness of the recognised benefits and positive effects, such as children better able to concentrate in school after good sleep. Respond to rumours as appropriate. Offer practical colours such as blue or green; consult SMARTNET/SMITN's experience with coloured nets IEC about the special formulation for nets (see 6.b)
6.d	Some occupations seem to be incompatible with using ITNs	Farmers (guarding crops at night), fishermen and others may not be able to avoid exposure	Network with field trials and pilot projects and apply the lessons learned from their experiences

7 SOURCE REDUCTION

Source reduction means the elimination of mosquito breeding places.

There are many different types of mosquitoes, but few are vectors for malaria. In Tanzania, malaria is mainly transmitted by two members of the *Anopheles* species: *Anopheles gambiae* and *Anopheles funestus*.

- *A. gambiae* breeds in standing water in the open. It likes to enter houses at sunset to feed, and after feeding it rests inside the houses in shaded places (under tables, in the eaves, etc.) It leaves the houses to breed. The peak feeding time is midnight to 2.00 a.m. *A. gambiae* feeds on humans only.
- *A. funestus* breeds in slow running water at the edges of rivers. It feeds on both humans and animals, and likes to feed late in the afternoon (6.00 p.m. to 8.00 p.m.). After feeding, *A. funestus* rests on the outside of houses under the eaves and in the bushes around the houses.

The major “nuisance” mosquitoes are *Culex* and *Aedes*. *Culex* likes dirty water (e.g. pit latrines) and tends to be found more in urban areas. The *Aedes* species includes the vectors for other diseases. *Aedes aegyptae* is the vector for yellow fever and dengue fever; neither of these diseases is yet found in Tanzania.

The factors mentioned above make it important to know the following:

⇒ What types of mosquitoes are there in your communities?

⇒ What are their habits?

Where do they breed?

Where do they rest?

What is their biting behaviour (feeding time, place of feeding, and host)?

Accurate information on these points makes it more likely that local initiatives for source reduction will be targeted effectively at eliminating the breeding places of mosquitoes that might transmit malaria. Many places considered to be mosquito breeding sites often do not support anopheles mosquitoes so expending a lot of effort to eliminate them, or spray them, may stop breeding but will not reduce malaria transmission. Also, because *Anopheles gambiae* is such an efficient vector if even a few sites remain for the female to lay her eggs transmission will continue. In rural areas it may be quite impossible to eliminate all hoof-prints and small depressions in which water collects and which remain wet for long enough for eggs to hatch. For these reasons it may be necessary to get the help of an entomology specialist to determine what type of mosquito is the main problem in your area and where they are breeding. Specialists from The National Institute for Medical Research (NIMR) or The Ifakara Health Research and Development Centre (IHRDC) may be able to help you.

Table 7 Initiatives for addressing factors that hinder source reduction

	Factors hindering source reduction	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
7.a	Breeding places cannot be drained	River has its own path and cannot be switched off. Water sources are needed for agriculture and livestock. Body of water may be too vast to drain	Determine whether <i>A. funestus</i> is a vector in this area; if not, the river is not a breeding place. Co-ordinate with Agriculture and Livestock Extension Officer and water engineer on what can be done without causing harm. Concentrate on other means of preventing and controlling malaria. See Chapter 6.
7.b	It will be difficult to eliminate breeding places	There are too many puddles and small depressions where water accumulates.	First eliminate mosquito breeding places close to human habitation (e.g. destroying useless containers). Decide how to reduce man-made problems (such as poor drainage around a hand-pump)
7.c	Where there are many water sources and where they must remain accessible (as in rural areas), source reduction is not very practical as a tool for controlling malaria	People feel that they are doing something positive when they cut grass and bushes around the house, or fill in places where water accumulates.	Activities that do no harm can continue, as long as they are not diverting people's energy and attention away from more effective interventions for controlling malaria. Use IEC to emphasise the effectiveness of other initiatives. Concentrate on other means of preventing and controlling malaria. See Chapters 4, 5, 6 and 8.

8 EPIDEMIC CONTROL

An epidemic is when there is an abnormal increase in morbidity and mortality in the community, the workload at health facilities increases and drug supplies and other resources become scarce. As a result, an emergency situation emerges, and an intersectorial task force is needed for an immediate response.

Malaria epidemics tend to occur in areas of unstable malaria, often in semi-arid and highland areas, where communities have little acquired immunity, leading to widespread morbidity and mortality. Recently, malaria epidemics have started posing a threat to many communities. A recent example of a malaria epidemic in Tanzania is from Muleba district in Kagera region. Muleba is comprised of highlands, putting it on the list of districts prone to malaria epidemics. After heavy El Nino rainfall there was an increase of mortality and morbidity from malaria.

Causes of malaria epidemics include abnormal weather conditions (excessive rainfall, favourable temperatures and humidity), major environmental changes (development of water resources and irrigation, public works, wars and natural disasters, population movements), interruption of vector control, inadequate therapeutic services, and drug resistance.

Early warning indicators can be used for epidemic forecasting. Making early analysis of information that is available on changes in risk factors may enable responsible people to mobilise resources rapidly to minimise epidemics. Methods for epidemic forecasting include advanced technologies for predicting ecological and climatic changes, and routinely collected data for the HMIS. To use the routine data effectively data collection, over short periods of time, on the pattern of malaria must be analysed quickly and frequently.

Data from the HMIS and reports in Infectious Disease Week Ending (IDWE) are often incomplete due to under-reporting. The quality of information may be affected by the quality of services at health facilities (including availability of drugs and supplies, and performance of health workers), by the communities' access to and use of health facilities, and by completeness of information available to the Health Assistant Officers responsible for reporting IDWE at Ward level.

NMCP is working with districts that are prone to epidemics in order to develop sentinel sites for reporting routine data. These will help to detect unusual changes in the number of malaria cases being seen in clinics. If you have any suspicion that the number of malaria cases in a particular week or fortnight seems higher than usual for that time of year it is important that the District Medical Officer knows about it.

Things that might alert communities or health workers to a problem include:

- more blood transfusions are being given than usual
- more cases of severe malaria are being seen than usual
- the proportion of parasite positive blood slides is higher than usual
- more deaths in the community, in all age groups, than normal

Table 8 Initiatives for addressing factors that hinder epidemic control

	Factors hindering epidemic control	Examples of reasons for the hindering factors (add more from experience)	Examples of appropriate initiatives
8.a	The seasonal pattern of malaria is not analysed	Raw data needed for the analysis are not available Health workers are uncertain how to use the raw data to do the analysis Health staff know how to do the analysis, but they are too busy	Discover why raw data are not available and take the appropriate remedial actions Train health workers preferably on-the-job, using real data, how to do the analysis IEC on organisation of work to raise the priority of preventing an epidemic from growing worse; Rearrangement of work patterns; Assistance from CORPs to complete the analysis
8.b	Malaria pattern is analysed too late to give early warning of an epidemic	Health staff are too busy to finish the analysis on time Health staff give the analysis low priority (perhaps they doubt that malaria epidemic can be controlled)	Rearrangement of work patterns; Assistance from CORPs to complete the analysis IEC to raising the priority of preventing an epidemic from growing worse
8.c	Data on morbidity and mortality are incomplete, so analysis is flawed	People with malaria do not attend health facility for treatment Ward officers do not obtain complete information on malaria cases by age group	Discover all the reasons why people do not attend health facility when ill with malaria (see Chapter 4) and choose appropriate actions Discover why the necessary information is not available to Ward officers and take appropriate measures to remedy the problem

9 ENTRY PROCESSES FOR EACH TOOL FOR MALARIA CONTROL

In districts with Ward Training Teams, PHC committees and CORPs there is already a good foundation to help communities to look at their own ideas about malaria, what they do about it, what their anxieties and fears are and what can be done differently.

The main need is to understand peoples' perceptions about all the aspects of malaria. The aim is for the community to build up its own information base about what it knows, what it does, what works and what does not work. The responsibility and ability to take action must be placed in the hands of the community, not the professionals; they are there to support the health of the community. The approach is for the community to point the way for the most appropriate initiatives for preventing and controlling malaria in their particular circumstances; if these initiatives are locally appropriate, they will have the best chance of being the most effective for controlling malaria.

The tables that follow include some suggestions that may or may not be appropriate; depending on what else is going on in the community. For example the 'Child to Child' approach would get children really involved in finding out about malaria and what can be done about it. They can work alongside other members of the community when doing PRA and other methods of gathering information and finding solutions. Targeting children as 'entry points' to change, in whatever way is relevant, seems to work. Also it is essential that the voices of those less likely to be heard in the community are listened to; ways of ensuring that this happens must be pursued. PRA does this, providing the facilitator makes sure that there is a comprehensive coverage of all sectors of the community. The District Training Team will have to follow up with facilitators to ensure that all sectors are indeed covered.

The 'Child to Child' approach has proved to be a very effective way of initiating attitude change and behavioural change. These changes continue into the long term. As the children have done the finding out, instead of simply receiving a message from someone else, the children have been engaged in discovering the message. The aim is then for them to take that message into the broader community; to their households, neighbours and friends.

The tables do not include lots of detail. For example, the information gathered by the community may suggest that it would be appropriate to set up some kind of credit scheme or loan scheme to enable people to buy nets and insecticide. It is important for the facilitators to have a clear idea about what they are trying to do. They must know what are the best ways of getting the information that is needed, and how to develop the information into community actions. This is a complex task and the tables do not explore all the kinds of approaches and questions that would need to be developed in preparing for such schemes.

The Ward Training Teams, CORPS, health committees and all other relevant partners may facilitate processes at community level.

Tools for malaria control	Suggested entry processes to enable the malaria control tool to be effective
Correct management of malaria cases	<p><i>Aim. To understand:</i></p> <ol style="list-style-type: none"> 1. Why household members assess the problem incorrectly and/or delay seeking help (4a, 4b, 4c, 4f, 4g, 4h, 4i, 4j) 2. Why health workers' diagnosis may not be correct (4a, 4c, 4d, 4f, 4g, 4i, 4j) 3. Why advice from shop keepers may not be correct (4a, 4e, 4g, 4h) <p>We need to understand what the hindering factors are, what peoples' perceptions are of malaria and the treatment given for it, and then we must look at ways of developing messages, control strategies and solutions for overcoming them.</p> <p>Target: all household members, health workers and shopkeepers selling malarial drugs.</p> <p>Suggestions</p> <ul style="list-style-type: none"> • Develop a Child to Child programme (schools, health team, Ward Training Teams (WTT), CORPS) to enable children to understand what the causes of malaria are, what the symptoms are, the dangers, the effect on the community (for example people unable to work, children not developing as well as they could if they did not have malaria) and what can be done. Use NMCP posters as prompts. • Children, WTT, CORPS and other interested people to work with the community (in teams according to the size of the community), to draw up a map which shows what people think about malaria, what they think about treatment, why they do not go for treatment, knowledge of drug use, and knowledge about the causes of malaria. <p>From the information gathered, work with the community to look at:</p> <ul style="list-style-type: none"> • What the areas of concern are. • What people can do, what are the medicines, where can people get help, where can people go to get medicines, what the medicines should be and how to use them. How to recognise symptoms in themselves and in others. <p>From all the information gathered in the community develop key messages for malaria control and deliver the messages through:</p> <ul style="list-style-type: none"> • Songs, Dramas/puppet shows • Stories/dramas and other programmes on radio • Discussions in schools, churches, mosques & community groups • On-going 'Child-to-Child' programme • Art competitions <p>Use all possible public occasions, festivities and other events that are relevant to the community.</p>

Tools for malaria control	Suggested entry processes to enable the malaria control tool to be effective
Correct management of malaria cases	<p>(Continued)</p> <p>Sharing information with village health workers and shop-keepers. Link any opportunities for contact with the raising of community awareness. Use information gathered from the community (including the ‘Child-to-Child’ initiative).</p> <p>WTT and CORPS to initiate regular (possibly every six months) discussion groups, or other appropriate methods of communication, between health workers, shop-keepers and the community. Share ideas about drugs, treatment, availability, cost, advice given, and follow-up.</p> <p>If drugs are not available, who in the community can bring pressure to bear on the suppliers?</p> <p>Link problems of drug resistance with the need alternative strategies.</p>
Effective use of Intermittent Preventive Treatment in Pregnancy	<p><i>Aim:</i> To find out women believe about malaria and pregnancy?</p> <p>Discussion groups / PRA exercises. Gather information from community members including older women, grandmothers and children in the community. Discussion groups with men as well as women should be considered.</p> <p>Ask questions at ante-natal clinics about the service women get from clinic staff; include clinic staff in discussion groups.</p> <p>If ‘lack of blood’ or anaemia is a common problem – find out what women believe about anaemia. Develop messages linking malaria with anaemia and the need for early treatment of fever and preventive treatment using SP for IPT</p> <p>Develop messages aimed at increasing women’s confidence in IPT with SP.</p> <p>Some of the key people through whom information and messages might be directed could be traditional healers, TBAs, women’s groups.</p>
Effective anti-malarial prophylaxis	<p><i>Aim:</i> To find out what people’s beliefs are about malaria and sickle cell disease?</p> <p>Develop messages and strategies resulting from the findings</p> <p><i>Aim:</i> To find out what people’s beliefs are about travellers and malaria.</p> <p>Develop messages and strategies resulting from the findings</p>

Tools for malaria control	Suggested entry processes to enable the malaria control tool to be effective
Use of mosquito nets treated with insecticide ITNs	<p><i>Aim:</i> To make nets and insecticide readily available and for people to start using ITNs.</p> <p>Find out through PRA exercises what people think about the use of nets and insecticide. Find out what is stopping them buying nets and net-treatment. Develop a strategy for promotion based on the findings. Ensure that the messages address people's fears and resistance.</p> <p>Do frequent demonstrations on how to treat a net; at clinics, meetings, women's gatherings and any time when people are gathered together. Ask respected older people, especially the wise women and men that people go to when they need advice or help with problems, to help you.</p> <p>Develop a week or month for promotion of the use of both nets and insecticide. Do this through schools, mosques, churches and community groups, on the street, everywhere.</p> <p>Develop songs, dramas, competitions for children, story telling; based around malaria control. Maintain a constant cycle of promotion and demand creation. At least every six months when there is a need to renew the insecticide, repeat the promotion. People forget and need reminding.</p> <p><i>Traditional insect repellents.</i> Find out what is used, what is effective. Develop messages for use.</p>
Source reduction	<p><i>Aim:</i> For the community to identify where the danger areas are for <i>anopheles</i> mosquito breeding so the community can decide on what actions can be taken to eliminate the dangers.</p> <p>Community to develop a map of the village and a map of the wider area to find out where there are areas for concern, where breeding areas are and what can be done to minimise the danger from malaria.</p> <p>Village to discuss what to do. Community action to be taken if needed.</p>
Epidemic control	<p><i>Aim:</i> To enable the community to analyse patterns of malaria cases, to take action, to alert and work with the professional bodies. For the community to take control through being aware of prevalence and patterns of malaria cases.</p> <p>Community could keep an ongoing diary of malaria prevalence, 'malaria alert'. They can start to gauge the numbers of cases to expect at any time of the year and recognise when numbers of cases are increasing above the expected. If able the alert group can keep graphs and plot action lines.</p> <p>Health workers, WTT, CORPs, children, to work together. This will put the responsibility in the hands of the community. The community and the professionals can then work together more closely and learn to trust each other.</p> <p>Train health workers on the job on how to analyse data in co-operation with the village 'malaria alert' groups.</p>

10 NEXT STEPS

The LIIMCO Project (Local Initiatives for Integrated Malaria Control) is a Ministry of Health Project of the National Malaria Control Programme. It was devised at the start of the process of Health Sector Reform in order to identify ways in which districts could plan for and implement locally appropriate actions to reduce the burden of malaria disease and control malaria transmission.

The next step for other districts to consider is whether they want to start doing malaria control in a holistic way or carry on basing malaria control attempts around treatment at government clinics. A brief read of this document will have shown that there is a lot that needs to be done away from the clinics. Malaria treatment at formal clinics is only a small part of the overall strategy that the National Malaria Control Programme recommends to win the malaria war.

Districts first need a focal person for malaria control. Once that person is identified, or recruited, a multifaceted 'District Malaria Team', that includes all the relevant people for supporting local initiatives for malaria control, should be chosen. The district team's task is to support ward and community initiatives.

Tasks for the District Malaria Team

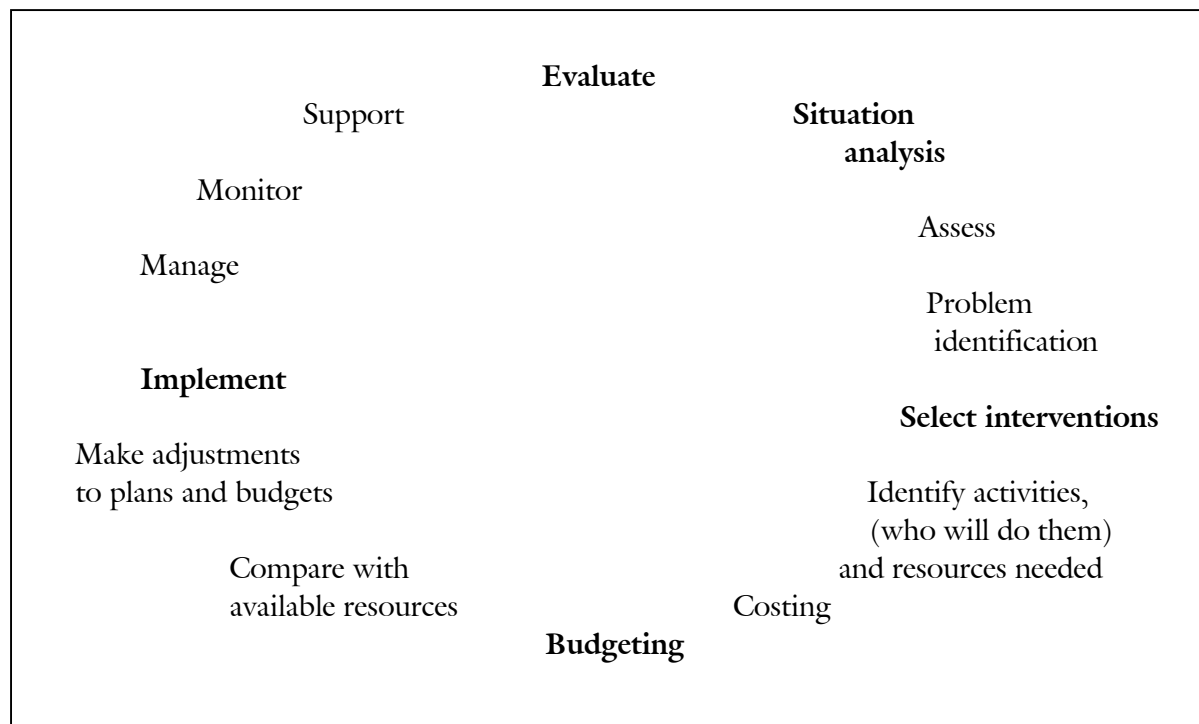
- Identify and contact ward level officers with responsibility for the communities selected to start the work
- Train the ward level people who will work on malaria control. They might use this document, materials from the NMCP and other relevant experience or materials (e.g. Community Based Health Care, the Mbeya Family Health Project)
- Support the Ward Teams as they work with selected communities on local initiatives for controlling malaria.
- Provide the point of contact between the ward level teams and the district, regional and national levels.

The ward level officers in the Ward Training Teams covering selected, start up, communities will use their sessions with the District Team and this document to familiarise themselves with the set of tools available for local malaria control. The Ward Training Teams will then meet the Community Owned Resource Persons (CORPs) from the selected communities to start the process of identifying what can be done to control malaria. They should use the most appropriate entry processes (refer to chapter 9) and other relevant experience from related initiatives at community level.

Combining the flexibility of local choice with district level plans for implementation is a real challenge. At community level, the local activities adopted for integrated malaria control should depend on selections made by the people themselves, with input and guidance from officers at ward and district level. These tools are designed to equip DTTs and WTTs to be consultants or advisors to the community. The districts should not be the ones choosing the initiatives, so for district planning the

emphasis has to be on the processes for supporting the community to make good choices.

Planning cycles. To increase the chances of success a planning cycle that includes all the elements detailed in the diagram below will be required.



Planning cycle diagram

Further Advice and help.

The LIIMCO project has been a time limited initiative to help a few districts to test ideas and learn lessons. Other districts interested in learning about the process in those districts can contact the Malaria Co-ordinators in Chunya, Mbarali, Same or Kyela. They will be able to share advice on how to replicate the process. On-the-job peer training, for districts whose staff have not had experience of community development approaches, is often an extremely good way to pass on lessons. It is usually more rewarding and cheaper than formal training sessions or workshops and the benefits are generally more long lasting.

The LIIMCO project is grateful to the following people for their contributions to the design of these tools:

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WHY TREAT MOSQUITO NETS WITH INSECTICIDE ?

Mosquitoes that transmit malaria mostly bite people indoors between 10.00 p.m. and 6.00 a.m.

Untreated nets.

- Provide some protection from mosquitoes.
- But let mosquitoes in to bite:
 - When a person enters or leaves.
 - If there is a hole or tear in the net.
 - If the net is badly hung.
 - When skin touches the net.
- Do not kill or repel mosquitoes.

Insecticide Treated Nets.

- Provide a **high level of protection.**
- **Kill** mosquitoes that touch the net.
- **Reduce the number of mosquitoes** in the house both inside and outside the net.
- **Also** kill lice, ticks, and pests such as bedbugs and cockroaches.
- **Are safe** for people to use.

When **whole communities use nets that are regularly treated with insecticide** there are fewer mosquitoes carrying malaria parasites. The advantages for the community are that:

- a) There is less severe malaria and fewer children die.
- b) Fewer children become sick from malaria.
- c) Young children are healthier and grow better.

Treating nets with insecticide is simple and quick, but it is important to do it correctly:

- Only use recommended insecticides and **re-treat nets** at 6 month intervals.
- Mix insecticide in the right quantity of water for the net.
- Dip and dry the net so that the whole net is treated.
- **Always read the instructions** on the pack of insecticide and follow them carefully.

How to treat a mosquito net with Insecticide

Materials Needed

- **Nets.** Nets should always be washed and dried before treatment.
- **Insecticide.** Different types and preparations are available, in single treatment kits or in bulk. Select one that is available in your area (e.g. IcoNet, Fendona, KOTab, Ngao)
- **Mixing container.** This can be a plastic basin, a bucket or a large plastic bag. Flat open plastic basins are probably the best.
- **Water.** You will need some way of measuring how much water you need, soda or beer bottles are easy to use. If you are using bulk insecticide you will need to measure this too.
- **Plastic sheet.** If available, the net can be dried on the sheet to prevent insecticide from being lost.

Treatment method

- Make sure the net is **clean, dry and unfolded.**
- **If treating many nets put on protective gloves.** Avoid getting insecticide on your face.
- **Read the instructions** on the insecticide container, measure the right amount of insecticide and water for the net/nets to be treated and **mix in the container.**
- Place the net in the container and **turn it in the solution thoroughly** until **all the material has become wet.** If treating a single net the result should be a net that is damp all over and little or no solution left in the container.
- Place the net to dry flat on a clean surface out of direct sunlight (e.g. on a bed, plastic sheet or empty grain sack).
- When the net is dry **hang it so that it covers the sleeping space** to protect the sleeper.

MALARIA IN PREGNANT WOMEN

Preventing the harmful effects of malaria

Pregnant women are at special risk from malaria infection and its harmful effects, severe anaemia and having a low birth weight baby. Women in their first and second pregnancies are at the greatest risk. The malaria infection is often not associated with a fever. So, in areas where malaria is common, the Ministry of Health now recommends that all pregnant women should receive two treatment doses of **SP** (3 tablets) when they attend antenatal clinic during the pregnancy, whether they appear to have malaria or not. This will help to protect both the mother and the unborn baby.

Women should also protect themselves from mosquitoes which carry malaria by sleeping under Insecticide Treated Mosquito Nets and, where possible, screening doors and windows.

Using SP for prevention in pregnancy

- Give SP for prevention once at the beginning of the second trimester and once at the beginning of the third trimester. The doses can be given at routine antenatal clinic visits along with tetanus toxoid.
- A pregnant woman who tells you she has had serious side effects after sulfa drugs should not be given SP for treatment or prevention. She should be referred to the nearest health facility so that she can be treated with quinine when sick with malaria.
- **Do** explain to the pregnant woman the importance of coming back for the second dose.
- Record properly and clearly on the antenatal card when SP is given. Always ask about side effects from the first dose of SP before giving the second dose.
- Do **not** restrict prevention doses only to those women who 'look like' they have malaria.

ANAEMIA

Anaemia is an important cause of suffering in pregnant women, young children and adolescent girls. Repeated malaria infections are an important cause of anaemia in Tanzania. But anaemia is often not recognised by health workers and because anaemia makes people's bodies weak they can become very sick and die. Always remember to look for the signs and symptoms of anaemia in your patients, especially pregnant women, children and adolescent girls.

Look for:

- Patients who become tired easily.
- Pale palms, pale nailbeds, pale inner eyelids and tongue.
- Infants and children who are unable to feed and drink well.
- Children or pregnant women who have a history of eating soil.
- Pregnant women who complain of severe dizziness, breathlessness or heavy legs.

Treatment

- If there is a history of fever or any signs of malaria give a treatment dose of SP.
- In pregnant women, as long as they have not had SP within the last two weeks, give a dose of SP, even if there are no signs or symptoms of malaria.
- folic acid: Start a 3 month treatment course two days after any SP (dose: 5mg/day).
- ferrous sulphate tablets: Refer to a health clinic for a three month course at a dose of 6 mg/kg each day. Adults need one 200mg ferrous sulphate tablet, three times each day.

Severe anaemia is a medical emergency. Signs: rapid difficult breathing, very pale, unable to feed, extreme tiredness, very swollen ankles.
Patients with these signs must be admitted to hospital as an emergency for immediate care.