



U.S. PRESIDENT'S MALARIA INITIATIVE



FRAMEWORK FOR INTEGRATED VECTOR CONTROL STRATEGY FOR MALARIA CONTROL

U.S. PRESIDENT'S MALARIA INITIATIVE
VECTORLINK PROJECT

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INTEGRATED VECTOR CONTROL STRATEGY FOR MALARIA CONTROL

20xx – 20xx

National Malaria Control Programme

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Abt Associates Inc. | 6130 Executive Blvd.
Rockville, MD 20852 | T. 301.347.5000 | F. 301.913.9061 |
www.abtassociates.com

FOREWORD

Include the need for updating the country's integrated vector control strategy (IVCS) given new tools and products now available, the trends in malaria transmission and morbidity, the changing funding landscape, and new challenges in vector control, which will require different approaches from previous plans.

ACKNOWLEDGMENTS

Acknowledgments

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ACRONYMS

ANC	Antenatal care
CDC	Centers for Disease Prevention and Control
EPI	Extended program on immunization
IRM	Insecticide resistance management
IRS	Indoor residual spraying
ITN	Insecticide-treated net
IVCS	Integrated vector control strategy
LLIN	Long-lasting insecticidal nets
LSM	Larval source management
NMCP	National Malaria Control Program
PBO	Piperonyl butoxide
PMI	President's Malaria Initiative
SOP	Standard operating procedure
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Summarize the main sections in short paragraphs.

1 page

I. INTRODUCTION

Under this section, summarize the following:

- The malaria problem in the country (number of cases reported in the past 3-5 years, rank of malaria in terms of morbidity and mortality among the top diseases)
- The malaria control strategy and associated goal and objectives
- The previous integrated vector control strategic plan, the period covered, achievements and challenges
- Description of the contents of this document and how it should be used

1 page

2. SITUATION ANALYSIS

2.1 CLIMATIC AND DEMOGRAPHIC PROFILES

Describe the main climatic features of the country, especially those relevant to malaria transmission and control. Present population size for the current year, annual population growth rate, proportion of children under 5 years old, proportion of pregnant women, and the proportions of urban and rural populations. Include a topographical map (showing altitudinal and climatic variations relevant to malaria control), with major water bodies and regional/state/provincial and district boundaries. Provide information on annual rainfall and temperature, altitudinal ranges, natural land cover (forests, swamps, etc.), main occupation of the majority of the country's population, and areas with mechanized agriculture, including irrigation schemes.

$\frac{3}{4}$ page

2.2 EPIDEMIOLOGICAL SITUATION OF MALARIA

Discuss malaria morbidity and mortality trends, prevalence of parasite species in different parts of the country, determinants of transmission and morbidity, factors that may be contributing to observed epidemiological trends, and impacts of interventions. Include data from the most recent Malaria Indicator Survey or relevant data from the most recent Demographic Health Survey. Where possible, include a map of estimated malaria infection prevalence (for children 2-10 years old or children under 5). Describe the transmission season in different parts of the country. Provide data on variations in malaria disease incidence and/or infection prevalence by age group, sex, and geographical area, if such data is available. Include information on population movement, including displacement, camps, cross-border transmission risks etc., where applicable.

1 page

2.3 MALARIA VECTORS IN THE COUNTRY

2.3.1 VECTOR SPECIES DISTRIBUTION

Include historical data on the distribution of different vector species or species complexes (if molecular analyses have not been carried out) in the country and recent trends or changes in composition and distribution. Include a map of the country with recent data (shown as pie charts indicating both species composition and relative densities) based on data from research projects (published or unpublished) and/or entomological surveillance sites. Provide the main preferred breeding sites for each vector species, and biting and resting habits. Include the following table.

TABLE X: MALARIA VECTORS AND THEIR DISTRIBUTION AND HABITS

Species	Vector status (main or secondary)	Geographical distribution in the country	Biting and resting habits	Key larval habitat characteristics

1 page

2.3.2 VECTOR BITING AND RESTING HABITS AND ENTOMOLOGICAL INOCULATION RATES

For each vector species, provide the most recent information on indoor and outdoor biting preference (endophagic or exophagic habit) and peak indoor and outdoor biting times, and the proportion of human-vector contact occurring indoors (taking into account both biting times and night time habits of humans). Describe any behavioral shifts or changes that have been observed in the most recent collections. Also provide indoor and outdoor resting habits of each vector species (endophilic and exophilic habits) if available. Provide any recent information on the human blood index data. Provide data on sporozoite rates and entomological inoculation rates by species, month and year, if available. Discuss the likely impacts of observed biting and resting habits on the effectiveness of LLINs and IRS.

½ page

2.3.3 INSECTICIDE RESISTANCE

Describe the magnitude of insecticide resistance in the major vectors focusing on recent data. Use maps to display distribution of resistance in the country by vector species (WHO test tubes and CDC bottle assays) together with mortality figures where possible. Present data on any target site gene frequencies and metabolic resistance test results (from synergist assays or biochemical and molecular assays). Include intensity of resistance data, if available.

TABLE X: INSECTICIDE SUSCEPTIBILITY BIOASSAY DATA

State/ region/ province	District	Month and year	Vector species	Test method	Insecticide and concentration (%)	Number of mosquitoes exposed	% mortality	Resistance status

2 pages

2.4 EXISTING (CURRENT) SITUATION OF VECTOR CONTROL INTERVENTIONS

This section is about the existing situation of vector control in the country (coverage by type of intervention in the past 3-5 years). Include a summary of historical context on use of malaria vector control interventions in the country. (NB: Do not describe *planned* outputs or interventions which should be presented under section 4 without repeating information provided under this section.)

¾ page

2.4.1 LONG-LASTING INSECTICIDAL NETS

Present data on number and type of LLINs distributed in the most recent universal coverage campaign and nets distributed through continuous channels (by year) in the past three years. Use a table of nets distributed by region, state or province. In addition, use maps showing per capita and total number of nets of each type (standard LLINs, PBO LLINs, and other next-generation LLINs) distributed by district. Include coverage and use levels from survey data in recent years (using WHO recommended indicators).

TABLE X: NUMBER OF LLINs DISTRIBUTED THROUGH UNIVERSAL COVERAGE CAMPAIGNS (20XX – 20XX)

Month and year	State/region/province	Number of districts covered	Standard (pyrethroid-only) LLINs distributed	PBO LLINs distributed	Other next-generation LLINs distributed	Funder(s) (use separate rows for each funder/donor if data is available)

TABLE X: NUMBER OF LLINs DISTRIBUTED THROUGH CONTINUOUS DISTRIBUTION CHANNELS (20XX – 20XX)

Month and year	State/region/province	No. of districts covered	Standard (pyrethroid-only) LLINs distributed				PBO LLINs distributed				Other next-generation LLINs distributed				Funder(s)
			ANC	EPI	School	Community	ANC	EPI	School	Community	ANC	EPI	School	Community	

1 ½ pages

2.4.2 INDOOR RESIDUAL SPRAYING

Include a table with insecticides used in the country for IRS in the last five years, with data on populations protected. Indicate whether the IRS program is targeted (sub-district level) or blanket coverage. Add A map showing areas covered by IRS in the past five years. Include insecticide residual efficacy and insecticide resistance data and how they helped shape selection of insecticide for IRS.

TABLE X: IRS COVERAGE DATA IN THE PAST FIVE YEARS

Month and year	State/region/province	District	Structures sprayed	Population protected	Insecticide used, including formulation

1 page

2.4.3 LARVAL SOURCE MANAGEMENT

Describe any areas or locations where larval source management (LSM) has been implemented in recent year as a malaria vector control intervention, and the specific intervention used. Include recommendations related to LSM target areas and situations in the context of the country. State if it is part of the existing national vector control strategy, and if not, the reason. If LSM is part of the strategy, indicate whether the country has standard operating procedures (SOPs) or guidelines for LSM implementation and the current practice on targeting.

½ page

2.4.4 OTHER VECTOR CONTROL INTERVENTIONS

Describe other vector control interventions that have been implemented either as a routine intervention or for trial or piloting, if any. Include why and how they were implemented. Where applicable, also include data on the use of individual protection measures such as repellents or coils and the volume of import and/or local production of these products, if available.

½ page

2.5 INSECTICIDES REGISTERED FOR PUBLIC HEALTH USE

Provide a list of all insecticides recommended by WHO for malaria control that are currently on the list of registered insecticides in the country. The list is usually maintained at a unit responsible for pesticides control under the ministry of agriculture. Include intended use, product (trade) name, active ingredient, formulation, insecticide class, and year of registration.

TABLE X: LIST OF RELEVANT INSECTICIDES REGISTERED IN THE COUNTRY AS OF 20XX

Insecticide class	Product (trade) name	Active ingredient	Formulation	Use (IRS, LLIN, larvicide)	Date of registration	WHO pre-qualified? (Yes/No)

½ page

2.6 EXISTING STRATEGIC PLANS

2.6.1 NATIONAL MALARIA STRATEGIC PLAN

Summarize the current national malaria control strategic plan, including its goal, objectives, strategies, and key activities. Describe how the IVCS is expected to contribute to and be aligned with the national malaria control strategic plan.

½ page

2.6.2 REVIEW OF THE PREVIOUS VECTOR CONTROL STRATEGIC PLAN

Summarize the achievements and challenges of the previous IVCS plan, including lessons learnt that will be useful in the planning and implementation of the current IVCS plan.

½ page

2.7 SWOT AND PROBLEM ANALYSES

Describe the strengths, weaknesses, opportunities and threats (SWOT) related to malaria vector control in the country. Discuss the main challenges or problems, their root causes, and any recommendations to overcome them. List risks and required actions to mitigate or minimize their impacts. List the key assumptions to implement this plan.

1 page

2.8 STAKEHOLDER ANALYSIS

List all relevant stakeholders (organizations whose activities will contribute to or have impacts on malaria vector control in the country). For each stakeholder, describe its roles in the vector control efforts and the mechanisms of involvement or coordination of work. Describe if or whether stakeholders meet regularly as part of a vector control working group or a similar forum.

TABLE X: STAKEHOLDER INSTITUTIONS AND THEIR ANTICIPATED ROLES IN VECTOR CONTROL

Stakeholder institution	Roles in vector control	Mechanism of involvement

¾ page

3. GOAL AND OBJECTIVES

3.1 GOAL

State the overall goal of the integrated vector control strategic plan (e.g. “To contribute to the reduction of malaria morbidity and mortality in [country] through implementation of cost-effective and locally appropriate integrated vector control.”)

¼ page

3.2 OBJECTIVES

List 4-6 objectives of the integrated vector control strategic plan. The objectives must be SMART (=specific, measurable, achievable, relevant and time-bound). (e.g. By 2025, at least 90% of populations in households in malaria-endemic areas with access to insecticide-treated nets use them regularly.”)

½ page

4. IMPLEMENTATION OF THE INTEGRATED VECTOR CONTROL STRATEGY

The details of key activities and strategies that will enable achievement of each objective of the strategic plan should be provided under this section. Here, provide a brief introduction to the sub-sections below.

¼ page

4.1 OVERARCHING PRINCIPLES AND CONTEXTS

4.1.1 EPIDEMIOLOGICAL STRATIFICATION FOR VECTOR CONTROL

List the criteria on which epidemiological stratification for vector control should be based under this plan. Then create strata based on the criteria, including descriptions. Create a map (showing state/regional/provincial and district boundaries) with the strata.

1 ¼ pages

4.1.2 PRIORITIZATION AND TARGETING PRINCIPLES AND PLAN

Discuss the principles on which the selection of priority vector control interventions and their geographic targeting are based. Specify prioritized interventions and indicate the characteristics of target areas, populations or situations. Provide information on the vector control coverage requirements in different strata, type of vector control tools recommended in different strata (e.g. LLINs and types of LLINs, IRS with specific chemicals), and implementation mechanisms (e.g. in the case of LLINs, the type of distribution channels).

Describe areas to be targeted by PBO LLINs and other next-generation LLINs, and the criteria for selection of the areas. Include a map showing areas recommended (under this plan) to be targeted for the distribution of different types of LLINs, including standard LLINs.

Describe areas to be targeted with IRS during the period covered by the current plan and the criteria for selection of target areas, insecticide classes and the rotation schedule. Describe criteria for timing of IRS operations based on seasonality of rainfall, vector density, etc. in different strata. Describe how the insecticide resistance profiles presented under the situation analysis section are used to shape the criteria for insecticide selection. Include a map showing IRS target areas during the period covered by the current plan.

1 page

4.1.3 PLAN FOR ENTOMOLOGICAL MONITORING

Describe briefly an introduction to the type of planned entomological monitoring, including distribution and densities of vector species, seasonality, vector habits, and insecticide resistance. Where data is available, present data with figures on seasonality of vector density for different geographic areas/strata in a manner that would be useful for timing of IRS and insecticide selection based on residual life.

¼ page

A) MONITORING SITES

List the planned entomological monitoring sites, including location, type of monitoring activities in each site, and frequency. Use a map showing locations of existing and potential additional entomological surveillance sites.

TABLE X: EXISTING AND PROPOSED ENTOMOLOGICAL MONITORING SITES AND FREQUENCY

State/ region/ province	District	Name of site	Existing or proposed	Date established if existing	Type of monitoring/study (vector density, biting rates, susceptibility tests, etc.)	Type of collection	Frequency

¾ page

B) MONITORING VECTOR DISTRIBUTION AND HABITS

Describe why monitoring vector composition and habits is essential in the country's context, especially in relation to effectiveness of interventions. Provide some details of the required work and the anticipated analysis.

½ page

C) INSECTICIDE RESISTANCE MONITORING

Provide details of the type of insecticide resistance monitoring required in different sites, and responsibilities of organizations or partners involved in the work.

½ page

D) INSECTICIDE RESISTANCE MANAGEMENT

Describe the recommended insecticide resistance management strategy in the country in relation to the core interventions, i.e. IRS and LLINs. Include a table of insecticide classes, insecticides and their mode of action. Provide details of rotation of chemicals for IRS and target areas for the deployment of PBO LLINs and other next-generation LLINs. Include the decision-making process and mechanisms, insecticide selection criteria for IRS, and the roles of technical working groups advising the national malaria control program. This section and any existing IRM plan should be aligned, if applicable.

1 page

E) QUALITY CONTROL OF VECTOR CONTROL PRODUCTS AND INTERVENTIONS

Describe quality control mechanisms to ensure that interventions are implemented according to national guidelines, and that vector control products to be procured fulfil minimum WHO specifications. Provide the main quality control systems and responsibilities. Specify the main activities in relation to pre-import product tests, post-implementation wall bioassay tests to ensure spray qualities and residual efficacy, and LLIN durability monitoring.

½ page

4.2 DETAILS OF APPROACHES AND ACTIVITIES

Include here a short paragraph that introduces the approaches and key activities of the plan and how these are structured under various sub-sections.

¼ page

4.2.1 OBJECTIVE 1

State the objective. List 2-4 strategies or approaches that will contribute to achievement of the objective. Under each strategy or approach, list 2-4 key activities.

E.g. Objective: “By 2025, at least 90% of populations in malaria endemic areas will sleep under insecticide-treated nets (ITNs)”.

Strategy 1: Increase household ownership of appropriate LLIN types according to insecticide resistance profiles, transmission intensity and other criteria.

Key activity 1.1 Determine target areas for LLIN distribution by type of net (standard, PBO or other next-generation LLINs)

Key activity 1.2 Distribute 10 million standard LLINs and 3 million PBO or other LLINs through universal coverage campaign in 20xx

Key activity 1.3 Distribute 1 million PBO LLINs through antenatal care clinics

Strategy 2: Strengthen social and behavioural change communication.

Key activity 2.1 Produce 10,000 educational leaflets and distribute in malaria endemic areas

Key activity 2.2 etc.

½ page

4.2.2 OBJECTIVE 2

As above

½ page

4.2.3 OBJECTIVE 3

As above

½ page

4.2.4 OBJECTIVE 4

Include additional objectives as necessary.

½ page

5. VECTOR CONTROL PROGRAM MANAGEMENT

Briefly summarize the vector control program structure under the national malaria control program (NMCP).

5.1 MANAGEMENT STRUCTURE AND RESPONSIBILITIES

Present an organogram of the NMCP and highlight roles related to vector control. Indicate the relationships of the various roles within the program and with regional/state/provincial and district roles.

½ page

5.2 HUMAN RESOURCE CAPACITY

Summarize the vector control human resource capacity at the national, state/regional/provincial, and district levels. Use a table to show total required staff and gaps, categorized by roles and educational qualifications.

TABLEX: HUMAN RESOURCES FOR VECTOR CONTROL AT NATIONAL AND SUB-NATIONAL LEVELS

Administrative level (national or sub-national)	Role	Qualification	Number available	Total required	Gap

½ page

6. OPERATIONAL RESEARCH

Under different sub-sections, describe: knowledge gaps or operational research needs (required evidence), including general topics, priority research questions, mechanisms of implementation, and responsible partners. Show potential sources of funding if possible.

1 ½ pages

7. MONITORING AND EVALUATION

Summarize the monitoring and evaluation component of the strategic plan by providing responsibilities. This should be followed by a list of performance/program indicators for each of the strategic objectives, strategies and key activities, together with frequency of data collection, sources of data and responsible bodies (the table can be presented as an annex if necessary).

2 pages

8. MAJOR ACTIVITIES AND TIMELINES

Summarize briefly the major activities and timelines. Refer to Annex 1 for a detailed Gantt chart. Mention the need to be flexible in timing of activities such as IRS depending on local situations including changes in transmission season in relation to residual efficacy of chemicals, and other factors that might necessitate changes.

1 page

9. BUDGET

Provide a summary table of the budget needed to implement the strategy, disaggregated by year and partners providing the funding, including domestic (government) contributions. Describe an overview of the justifications for the main budget components, and a summary of the potential sources of funding. Provide details of the budget in an annex, indicating budget required, budget available by source, gaps, and potential sources to fill the gaps. Budget estimates for an activity may be different according to funds provided by the government and partners implementing the activity. The methodology used to estimate the budget and assumptions should be included for each major activity.

$\frac{3}{4}$ page

10. REFERENCES

List all documents (published papers, online resources, reports) referred to in the strategic plan.

1 page

II. ANNEXES

Include large tables and detailed information in separate, numbered annexes, with descriptive titles.

ANNEX 1: ACTIVITIES AND TIMELINES

Objective	Strategy or approach	Key activity	Responsible body	Year 1				Year 2				Year 3				Year 4				Year 5				
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	

ANNEX 2: BUDGET (USD)

Budget line	Year 1	Year 2	Year 3	Year 4	Year 5	Total needed	Available		Gap		Assumptions and other remarks
							Amount	Source	Amount	Potential source	