Kingdom of Cambodia

Nation-Religion-King

Ministry of Health

Structure,Funtions and Objectives of the National Center for Parasitology, Entomology and Malaria Control (CNM)

October 2012

PREFACE

I deem it a great pleasure and privilege to introduce this document: *Structure, Functions and Objectives of the National Centre for Parasitology, Entomology and Malaria Control (CNM).*

Malaria, Dengue Haemorrhagic Fever (DHF), Schistosomiasis, Soil-transmitted helminthiasis and other parasitic and vector borne diseases continue to be significant public health problems in Cambodia and the CNM has been mandated to concentrate on these diseases, elimination or control of which are high priorities for the Ministry of Health, Kingdom of Cambodia. We would like to place on record our appreciation for the bilateral and multilateral partnerships that have enabled and continue to enable CNM to achieve the major programmatic targets and goals. Although the malaria program has achieved the MDG target relating to malaria mortality four years ahead of schedule and is on course for achieving the target relating to malaria incidence, the initiative taken by Samdech Akka Moha Sena Padei Techo **HUN SEN**, Prime Minister of the Kingdom of Cambodia, to declare the country's commitment to eliminate malaria by 2025 places a huge responsibility on CNM to usher in appropriate structural and functional changes at central as well as at the operational level in the field. Involvement of concerned Ministries, community based organisations and communities themselves are absolutely important if the clarion call of malaria elimination given by our Honourable Prime Minister is to be turned into a reality! Cambodia has proved that Neglected Tropical Diseases are not neglected in the country and as the World Bank stated "Cambodia has been a leader in the fight against NTDs, in particular in its efforts to control schistosomiasis and soil transmitted helminthes. Through the Government's National Task Force for Helminth Control, Cambodia became the first country to provide deworming treatment to every child". CNM needs to ensure that the gains made till date are sustained and further improvements are demonstrated. In the absence of an effective vaccine against dengue, the national dengue control program will in conjunction with the top-down temephos-Bti larviciding application in high risk areas, need to advocate and gradually scale up the community based vector control (for e.g. using larvivorous fish) in partnership with various NGOs, other government Ministries (Education Youth and Sport, Rural Development, Water supply, Environment and Local Government) and community organizations.

CNM has overtime evolved as the nodal department of the MOH responsible for the control of vector borne and parasitic diseases in Cambodia. The changing role of the CNM is reflected by the change from a technical organization with separate departments of clinical care, entomology, parasitology, pharmacy and epidemiology to a service organization, organized by the type of external services provided. After taking over as the Director of CNM in June 2011, Dr. Char Meng Chuor reviewed the structure and functioning of the Center and decided to embark upon a phase of restructuring the Center and redefining the roles and responsibilities of the various departments and units in line with the long-term strategic directions agreed with the Ministry of Health. This document is a culmination of these efforts aimed at facilitating the realization of the long-term vision and goals of the organization.

This document on the *Structure, Functions and Objectives of the National Centre for Parasitology, Entomology and Malaria Control (CNM)* was developed in July- August 2012 and finalized in September 2012 by the Ministry of Health, Kingdom of Cambodia with the full participation of the leaders and technical and support staff of CNM. I wish to congratulate and acknowledge the contributions made by the Director, Vice Directors, Consultants and the staff of CNM in the drafting and finalisation of this document.

Phnom Penh, Date ... / 10 / 2012

Dr. Mam Bunheng
Minister of Health

ACRONYMS AND ABBREVIATIONS

AFRIMS	Armed Forces Research Institute of Medical Sciences
Bti	Bacillus Thuringiensis Israelensis
CHIK	Chikungunya
CNM	National Centre for Parasitology, Entomology and Malaria Control
DHF	Dengue Haemorrhagic Fever
FBT	Foodborne Trematodiasis
FSAT	Focused Screening and Treatment
GFATM	Global Fund to Fight AIDS, TB and Malaria
GMP	Good Manufacturing Practice
GPARC	Global Plan for Artemisinin Resistance Containment
HSP2	Health Sector Strategic Plan 2008-15
IEC	Information, Education and Communication
IT	Information Technology
IVM	Integrated vector management
LF	Lymphatic Filariasis
NGO	Non-governmental organization
NIH	National Institutes of Health
NMCP	National Malaria Control Programme
NTD	Neglected Tropical Diseases
MDA	Mass Drug Administration
MDG	Millennium Development Goals
MOH	Ministry of Health
NSPEM	National Strategic Plan for Malaria Elimination (2011-2025)
NAMRU	Naval Medical Research Unit
NSDP	National Strategic Development Plan 2006-10
PRSP	Poverty Reduction Strategy Papers
PSI	Population Services International
RGC	Royal Government of Cambodia
RS	the Rectangular Strategy for Growth, Employment, Equity and Efficiency of the RGC
SCH	Schistosomiasis
SOPs	Standard operating procedures
STH	Soil Transmitted Helminthiasis
URC-CAP	University Research Co.- Control and Prevention of Malaria
USAID	United States Agency for International Development
PPM	Public Private Mix
VMW	Village Malaria Workers.
WHA	World Health Assembly

WHO	World Health Organisation
FAO	Food and Agriculture Organisation
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme

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Structure, Functions and Objectives of the National Center for Parasitology, Entomology and Malaria Control (CNM)

1. BACKGROUND

Malaria is a complex and priority public health problem for the Kingdom of Cambodia. Malaria operations commenced in Cambodia in 1951 with the avowed goal of country-wide eradication. By the early 1960s, after 6 years of spraying with DDT, the eradication campaign successfully brought malaria down malaria prevalence rates down from 60% to 0.9%. However, once the campaign stopped, the rates quickly jumped back up. The disruptions of the 1970s brought malaria control to a grinding halt and put the whole health services delivery system in total disarray. Once the revival of the public health system began, the Ministry of Health (MOH), Royal Government of Cambodia (RGC) founded and designated a specialized institution, the National Malaria Center (CNM) in 1984 to provide technical and material support to malaria treatment facilities in provincial and district hospitals. Throughout the 1980s the program struggled with extremely limited resources to treat the large number of cases among persons working in defense works along the Thai border. It was not until the early 1990s that logistical support for malaria diagnosis and treatment became integrated with the national essential drugs program and the National Malaria Control Programme (NMCP) could begin a transition from purely hospital-based curative activities to more pro-active community based education, evaluation and control activities. The CNM was then mandated to develop and execute nation-wide malaria control strategy. The CNM was reorganized in November/December 1995 with additional responsibilities for schistosomiasis and dengue control activities. Subsequently filariasis elimination programme was added to the list of disease control programmes covered by the Center. CNM has overtime evolved as the nodal department of the MOH responsible for the control of vector borne and parasitic diseases in Cambodia. This includes investigation, training and supervision of health staff and other interventions. In 2004, the Ministry of Health re-named the center as “National Center for Parasitology Entomology and Malaria Control” whilst retaining the original acronym. In January 2012, the Ministry of Health entrusted the responsibility for the Control of

Neglected Tropical Diseases in Cambodia and implementation of an Integrated National Plan of Action focused on diseases controlled and eliminated by preventive chemotherapy 2012 – 2015 to CNM. Specific responsibilities entrusted to CNM include the control/elimination of Soil Transmitted Helminthiasis (STH), Schistosomiasis (SCH), Lymphatic Filariasis (LF), Foodborne Trematodiasis (FBT) and Strongyloidiasis and other parasitic diseases. Currently CNM co-ordinates three main programmes: Malaria, Dengue Hemorrhagic Fever (DHF) and Helminthiasis. In addition to its disease control responsibilities CNM also operates the national malaria reference laboratory and conducts a wide range of operational research projects in collaboration with non-governmental partners. CNM has therefore in recent years emerged as an apex training, research and program center carrying out innovative vector borne and parasitic disease control activities in Cambodia.

The changing role of the CNM is reflected by the change from a technical organization with separate departments of clinical care, entomology, parasitology, pharmacy and epidemiology to a service organization, organized by the type of external services provided.

2. KEY FEATURES

- A specialized institution set up by the Ministry of Health, to function as the national level nodal department responsible for the control/elimination of vector borne and parasitic diseases.
- The Center is equipped with Technical Experts in the fields of Public Health, Parasitology, Entomology, Epidemiology, Behaviour Change Communication and Program Management aspects of vector borne and parasitic diseases.
- CNM co-ordinates four main programmes; malaria, dengue haemorrhagic fever (DHF), filariasis and schistosomiasis and intestinal parasitic infections.
- The functions include basic and operational research, training and supervision of health staff and implementing, monitoring and evaluating disease control programs.
- CNM operates under the administrative authority of the MoH and in collaboration with other key partners such as Ministry of the Interior (in particular the departments of Health and

Economy and Anti-Crime), Ministry of National Defense, Ministry of Women Affairs and Veteran, Ministry of Education Youth and Sports, Ministry of Health (in particular the Department of Food and Drugs, Central Medical Stores, PHDs and ODs), development partners, international and national NGOs, local governments and community structures.

- Major projects currently implemented include partnership with WHO, GFATM, USAID, NIH of USA, AFRIMS, NAMRU and a host of national and international NGOs.

3. STRUCTURE

According to the organogram (See Annex 1), the CNM is organized into three bureaus: Technical, Administration, and Financial. These are headed by Chiefs of Bureau. Further restructuring is currently under consideration in order to strengthen the management of the different national programmes operated by the Center.

The Administration Bureau is primarily responsible for administration including personnel and logistics management. The bureau oversees the functioning of 6 units, namely Administration, Transportation, Procurement, Library, Security and Cleaning. The procurement unit is responsible for the quantification, ordering and purchasing of drugs, commodities, equipment and goods required by the Programmes operated by CNM.

The finance bureau manages all financial matters including donor supported grants and projects. The Bureau's work is carried out by two units, namely Accounting and Planning and Materials.

The Technical Bureau oversees treatment, training and supervision for the four disease-specific programs. The malaria program is the largest among the disease specific programs managed by the Technical Bureau, accounting for 75 percent of the Technical Bureau's staff. The work of the Bureau is carried out by twelve technical units- Entomology, Epidemiology, Research, Vector Control, Monitoring and Evaluation, Laboratory, Health Education, IT, Helminthiasis, Filariasis, PPM and Village Malaria Workers.

Personnel and Staff
CNM has 155 staffs (as of 1 October, 2012) with the following break-up:

- 89 are presently on the Government rolls working
- 13 are contractual staff
- 24 are temporary staff
- 7 are staff who have suspended their jobs without payment
- 22 staffs who working on Global Fund grants

CNM Director (01 person)

CNM Vice Directors (07 persons)

Technical Bureau (73 persons)

- Entomology unit,
- Epidemiology unit,
- Research unit,
- Vector Control unit,
- Monitoring and Evaluation unit,
- Laboratory unit,
- Health Education unit,
- IT unit,
- PPM unit
- Village Malaria Workers unit
- Helminthiasis unit,
- Filariasis unit,

Administration Bureau (46 persons)

- Administration unit
- Transportation unit
- Procurement unit
- Library
- Security unit
- Cleaning unit

Finance Bureau (6 persons)

- Accounting unit
- Planning and Materials unit

Detailed organograms of the CNM and job responsibilities of heads of the bureaus / units are provided in Annex 1.

4. FUNCTIONS

The National Malaria Center (CNM) is one of the health institutions of various institutions under the Ministry of Health, which is responsible for the control of vector-borne diseases. It co-ordinates three main programmes: malaria, dengue haemorrhagic fever (DHF), Neglected Tropical Diseases (NTDs), except trachoma. Its role as the apex centre of reference and operational research is envisaged to be developed in the years to come.

The main functions of the CNM are:

a) To provide technical assistance to the MoH for determining government policies, objectives and effective national strategies
b) To define effective policy interventions and frame technical guidelines and operational policies in order to guide the provinces, operational health districts and health facilities for implementation of various programme strategies.
c) To assess the resource gaps from time to time in order to assist the MoH for mobilizing the required resources and providing an equitable support based on the magnitude of the problem.
d) To assist the MoH for budgeting and planning of the logistics pertaining to the different programmes overseen by the Center.
e) To strengthen the institutional capacity at all levels through training, supervision and on-the-job mentoring
f) To support the health system network for providing access to the population and to supervise program activities,
g) To monitor program implementation through regular monitoring visits and submission of reports and returns
h) To establish quality assurance for diagnostic and case management services including cross checking of blood slides for quality control,
i) To periodically evaluate the various program interventions, projects and programmes

j) To conduct entomological studies, drug resistance studies and carry out appropriate operational research studies
k) To collaborate with national and international partners and donors.

EVOLVING CNM FUNCTIONS DECENTRALIZATION/DE-CONCENTRATION

Within the context of the Royal Government de-concentration/de-centralization policies, several functions are being progressively decentralized to provincial, district and community levels. For instance, CNM does not have direct authority for planning, budgeting and financing of its national programmes at provincial, district and communities level. The Department of Planning and Health Information (DPHI) leads the sector planning process for local health authorities and guides these entities during the entire planning process including formulation of Annual Operational Plans (AOPs). The primary health care functions including treatment and prevention for all three programs (viz. malaria, dengue and helminthiasis involving a wide range of activities such as bednet distribution, abate distribution, antihelminthic drug distribution, diagnosis and treatment by VMWs, etc.), are in the process of being decentralised to the district and community councils. Such decentralisation involves direct transfer of human, financial, logistic and other appropriate resources (except procurement of health products and pharmaceuticals which will be undertaken through the MOH national budget) to the district and commune councils with decision making and implementation resting with these entities. CNM inputs will be limited to setting the direction for priority interventions to be delivered at each level of the health system, but it will have no mandate in actual resource allocation to the implementing agencies. Bottom-up planning including formulation of AOPs at every level of implementation will be encouraged and nurtured over the next several years during which CNM will provide guidance for prioritisation and actual implementation.

5. VISION, MISSION, GOAL, AIM AND OBJECTIVES OF CNM

5.1 Vision Statement

CNM envisages a self-sustained and well informed, healthy Cambodia with equitable access to quality health care services nearest to their residences; where people live in a clean environment, adopt healthy lifestyles including practices that discourage mosquitoes and other vectors from causing nuisance and disease; where there may be vectors and parasites but no vector-borne and parasitic diseases such as malaria, dengue filariasis, helminthiasis and schistosomiasis exist, and even if cases do occur sporadically, they are promptly diagnosed and effectively treated.

5.2 Mission Statement

It is our commitment to continuously empower through operational research, training and capacity development, all those involved in vector and parasitic control at different levels in the country both in the public and private sectors, in relentlessly undertaking all possible and appropriate actions in order to ultimately eliminate vector borne and parasitic diseases in the country.

5.3 Goal of CNM

To serve as an efficient and effective apex center of excellence for ultimately eliminating from the country the common vector borne and parasitic diseases.

5.4 Overall Aim of CNM

To contribute to the improvement of the health status of the population of Cambodia by developing robust systems and supporting the local capacity and thus contributing to sustainable reductions in the morbidity and mortality from malaria, dengue fever, schistosomiasis, and other helminths, and elimination of filariasis.

5.5 Objectives of CNM

1. To operate flexible enhanced programs that can deliver effective vector borne and parasitic disease control within identified time spans.
2. To ensure that the right diagnostics and treatment for vector borne and parasitic diseases are available to all

people – especially the poor and disadvantaged living in urban and rural areas.

3. To continuously keep a vigilant watch on the vector borne and parasitic disease situation in the country and make appropriate policy, program and operational recommendations from time to time.
4. To carry out operational research studies the outcomes of which will directly feed back into program enhancement.
5. To contribute to the continuous capacity-building of all the institutions and personnel involved in vector borne and parasitic disease control at all levels in the country.
6. To assist the MOH and relevant entities for mobilizing in time all the required resources including financial from all possible sources, national and international in order to control the vector borne and parasitic diseases in the country.

6. STRATEGIC DIRECTIONS FOR CNM

In the short-term, CNM's activities are directed in a way to meet with the Millennium Development Goal of halting and reversing the incidence of malaria and other vector borne and parasitic diseases by the year 2015 and contributing towards reduction of poverty.

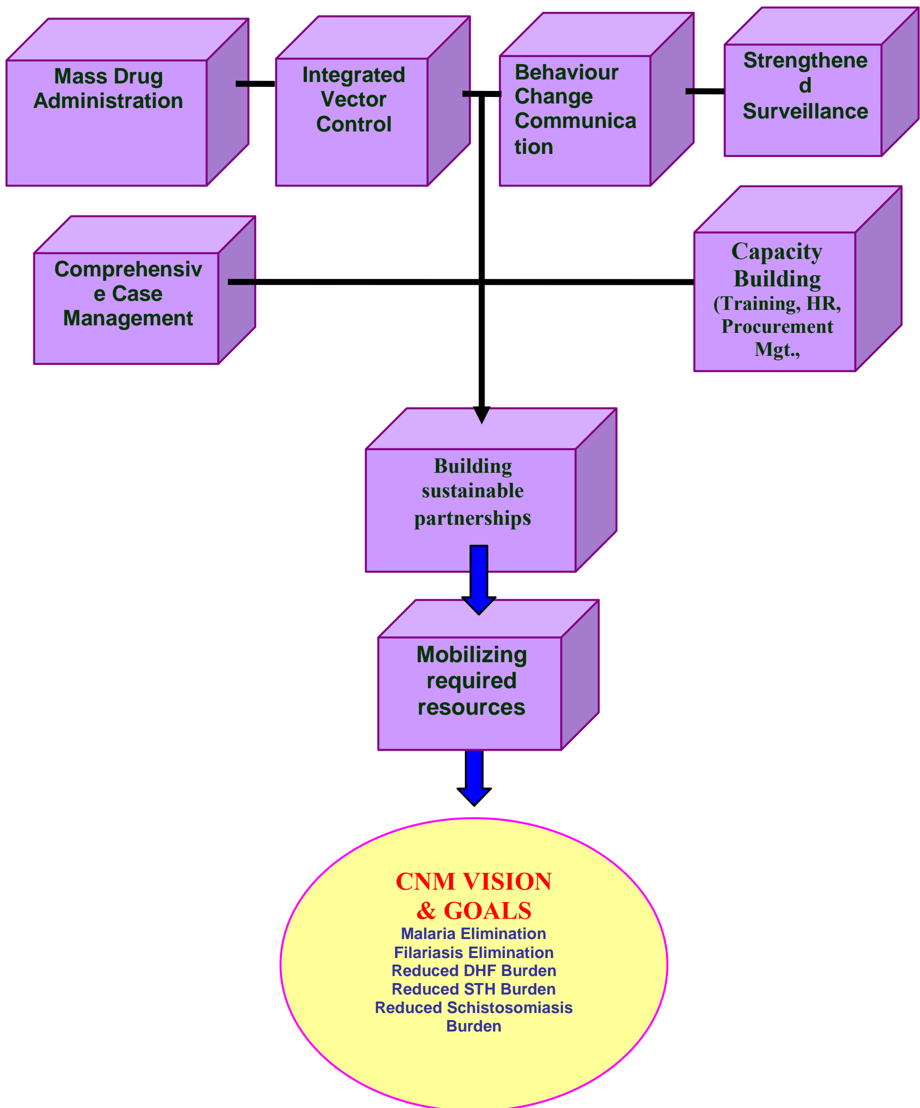
The strategic directions that CNM wishes to pursue over the next 15 years (see Figure 1) in order to control/eliminate parasitic and vector-borne diseases include the following: Comprehensive Case Management, Mass Drug Administration, Integrated Vector Control, Behaviour Change Communication and Capacity Building (including Training, Human Resource Management, Procurement Management, Monitoring &Evaluation, Operational Research, etc.). CNM will endeavour to build sustainable partnerships and mobilise the required resources over the next 15 years in order to ensure that the vision and goals of CNM are realized. These strategic directions are briefly described below.

6.1 Comprehensive Case Management

A three-pronged approach to case management comprising of (1) free provision through public health facilities including those in the police

and defense sectors; (2) free provision through community volunteers (for e.g. malaria EDAT through Village Malaria Workers or VMWs) and schools (for e.g. helminthiasis) (3) subsidized provision through the private sector (for e.g. antimalarials though PSI) will be employed throughout the country and further strengthened through continued clinical research to determine candidate regimens suitable for the country and carrying much less probability of developing drug resistance, suitable and regular updating of national diagnosis and treatment guidelines (for malaria, DHF, etc.), training of both public and private health sector providers (including referral hospitals) on the national guidelines, making more robust estimates of requirements of diagnostics and drugs and commodities, procurement from manufacturers/ suppliers who adhere to GMP standards, improved drug and commodity management practices (including curtailing the pernicious practice of pilferage of public sector drugs) at all levels down to the health center level, monitoring community drug use practices, establishing and maintaining drug and parasitological diagnosis quality assurance system and carrying out an all-out campaign against counterfeit drugs and rigorous implementation of the ban on artemisinin monotherapy, improving referral services especially for severe and complicated cases (for e.g. malaria, DHF and schistosomiasis, although no severe cases of the latter have actually been reported during the last decade) and those requiring surgery (for e.g. lymphatic filariasis) whether first seen in public or private sector. The CNM will endeavor to ensure compliance of the private sector with government regulations through collaboration and advocacy efforts in order to reduce in particular the morbidity and case fatality from DHF and malaria.

Figure 1: Strategic Directions for CNM from 2013-2025



The National Dengue Control Strategy (2013-2017) envisages the following key activities in relation to the case diagnosis and management of Dengue-CHIK fevers:

- Revising and updating the National Guidelines for clinical diagnosis and management of DF/DHF for use in referral and provincial hospitals.
- Producing a practical manual and schematic flow chart to facilitate health centers and district hospitals in early recognition and referral of severe DHF cases.
- Conducting information campaigns to private practitioners and private hospitals in target areas, especially before the expected epidemic season.
- Conduct public awareness campaign on dengue-CHIK prevention measures, warning signs and early hospital seeking behavior and on beds during hospitalization.
- Providing supervision of equipment supplies and human resources needed in all provincial and some specific district hospitals during outbreaks of DHF.
- To conduct training courses for hospital and health center staff on clinical diagnosis and management of DHF-CHIK.

6.2 Mass Drug Administration

The main strategy to control helminthic NTDs in Cambodia is preventive chemotherapy, which is regular treatment of the population at-risk with anthelminthics and drugs - alone or in combination - according to the diseases targeted. Drugs are being made available to target population, free of charge, through large-scale drug distribution interventions. Regular rounds of Mass Drug Administration (MDA) have become the mainstay of Lymphatic Filariasis elimination and control of Soil Transmitted Helminthiasis and Schistosomiasis in Cambodia. Five rounds of MDA were completed by 2009 under the national LF elimination programme. Stop-MDA surveys conducted in 2010 showed that transmission of LF has been reduced below critical levels to enable stopping of MDA. The national LF elimination programme is now transiting into post intervention surveillance phase.

CNM will continue to mobilise funds, human and material resources to ensure the continued implementation of MDA in the future as follows.

- *Soil Transmitted Helminthiasis (STH):* Maintaining the high coverage of distribution of albendazole or mebendazole in school-aged children and preschool children, in all provinces that had moderate to high prevalence of STH; progressive scaling up of the coverage of drug distribution in women of child bearing age, to cover all at risk at least once per year integrating with existing campaigns
- *Schistosomiasis (SCH):* Distribution of praziquantel in districts endemic for schistosomiasis to cover entire population at risk once in two years
- *Foodborne Trematodiasis (FBT):* Distribution of praziquantel in districts endemic for opisthorchiasis
- *Strongyloidiasis:* Distribution of ivermectin in districts identified as high endemic

Cambodia will continue to demonstrate its ability to integrate drug distribution with the existing structures (e.g. school system, vitamin A distribution activities, women union) and personnel (teachers, village health volunteers and village malaria workers) further reducing the cost of logistics. MDA activities will also be combined with health education messages.

The long-term National Strategic Plan for Malaria Elimination (NSPEM 2011-2025) advocates Mass Drug Administration and/or Focused Screening and Treatment (FSAT) in selected areas once the on-going pilot interventions provide sufficient evidence of effectiveness and impact, particularly in reducing and eliminating drug resistance.

6.3 Integrated vector control

Integrated vector control for malaria in the immediate term will be mainly focused on achieving a universal coverage with insecticide treated nets among populations living in the targeted villages as well as mobile and migrant populations plus focal indoor residual spraying (IRS). The CNM envisions a gradual transition towards a community driven programme for vector control and associated health education. This is expected to result in increased community participation and mobilization with villagers given the capacity to assess, plan and monitor distribution and replacement of LLINs in partnership with

health center staff in each catchment area. A system for LLIN replacement or topping up will be put in place so that households will have access to additional nets in between net distribution campaigns. This will be a crucial factor it attaining malaria elimination. IRS will be used as part of the response to malaria "hot spots" in the country as it is an effective way to stop transmission and IRS capacity will be established in malarious ODs to provide the response.

CNM will conduct operational research on acceptability of all net types; entomological study in areas of changing forest ecology; particularly in relation to the use of insecticides for IRS; assess additional protection of using repellents. Research findings and lessons learnt will be used to further refine the vector control strategies for malaria elimination.

The mass larviciding application of insecticide to water storage jars/ containers which are often kept inside and outside houses in stratified dengue high-risk areas in a campaign mode as pre-emptive strike is the only strategy in combination with health education and sources reduction to fight against the dengue infection. Pending the development of new vector control tools, comprehensive distribution of temephos (abate 1% SG) and Bti (Bacillus Thuringiensis Israelensis) in selective areas will be implemented as part of the DHF epidemic preparedness and outbreak response measure. This vector control activity however, requires intensive planning, mass mobilization of personnel and considerable expenditure. It has to be repeated in 3-monthly intervals during the transmission season. In conjunction with the top–down temephos-Bti larviciding application in high risk areas, community based vector control will be further promoted, notably using larvivorous fish for dengue vector control. Community-based interventions encouraging behavior change using Communication for Behavioural Impact in DHF-Chik prevention will be applied. Large scale use of larvivorous guppy fish will be promoted. Judicious use of insecticide and monitoring insecticide resistance and vector surveillance are part of the IVM component and will be strengthened. Key activities to be proposed as part of the National Dengue Strategy (2013-2017) are:

- Establish outbreak management plans to increase resource mobilization and implementation nationwide.

- Strengthen provincial communicable disease surveillance and control and malaria teams to include dengue-chik outbreak response.
- Plan comprehensive distribution and application of insecticides to cover all water jars and guide to the house owners for sources reduction in designated high risk areas.
- Mobilize the community using mass media health education and mobile health education teams to increase participation and partnership.
- Pilot and scale up the concept of COMBI (Communication for Behavioural Impact) on DHF-Chik vector control.
- Implementing community-based vector control projects through improved inter-agency and community involvement in rural districts with the highest risk of DHF-Chik.
- Carry out regular vector surveillance and monitoring in selected geographical areas
- Maintaining vector susceptibility to insecticides used in vector control

CNM will aim to introduce and scale up environmental management such as stream cleaning, cutting of grasses, etc., environmental modification including permanent draining or filling of breeding sites or changes in water flow/salinity, village/household/cleaning and biological control (for e.g. seeding of breeding areas with larvivirous fish (such as Gambusia affinis) as part of its Integrated Vector Management strategy to control/eliminate DHF, Malaria and other vector-borne diseases in the country.

6.4 Strengthened Surveillance

CNM will continue to ensure that surveillance activities are strengthened at all levels of the implementation of the three national programmes managed by it. Malaria surveillance which is currently in the control mode will need to change to focus more on the analysis of the data as a basis for action, particularly at the field level. A shift from monthly to weekly reporting may be necessary as surveillance system is strengthened. A community based day-0 surveillance system for all species is proposed to be established for all malarious areas as the basis for malaria surveillance. In order to make day-0 reporting functional, cell phones and SMS text messaging will need to

be established in all malarious operational districts. Progressively a mechanism for investigating all confirmed cases needs to be put in place that is linked to day-0 reporting. As districts move into pre-elimination, a response team will have to be established at district level that goes out to investigate every positive case and take appropriate action. A series of standard operating procedures (SOPs) need to be developed that describe in detail every step of the reporting, case investigation, and focal response operations. In addition to regular case investigation all malaria deaths need to be investigated. This needs to be in place before 2015.

To have an effective epidemiological surveillance system and the capacity to mount a timely and effective response are the greatest challenges for the NDCP till date. The following major areas will be focused on: to efficiently report cases; to strengthen serological and virological surveillance at the sentinel hospitals; to improve the quality of epidemiological data for effective use; and to develop sensitive indicators for decision making. Key activities to be proposed as part of the National Dengue Strategy (2013-2017) are:

- Working closely with the Department of Communicable Disease Control of the MOH for strengthening the zero reporting system.
- Implementing active case surveillance of DF/DHF-CHIK cases in Kantha-Bopha and the National Paediatric Hospital.
- Maintaining and improving current epidemiological analysis for early recognition of an outbreak.
- Incorporating GIS technology to facilitate epidemiological-entomological surveillance activities.
- Strengthening serological surveillance and virological surveillance in five sentinel hospitals by the Pasteur Institute.

Surveillance activities for helminth control will have the following focus.

- *SCH*: Covering entire population at risk of SCH and carrying out intense surveillance
- *STH*: Attention will also be focussed on surveillance and improving quality, collation and reporting of data.

- *LF*: Post-MDA surveillance will be carried out for five years (2011-2015). The Post-MDA Surveillance 1 is being conducted in 2012 and Post-MDA Surveillance II will be undertaken in 2015, as per the new guidelines from WHO. Preparation of the verification dossier could be targeted for 2015/2016. Research should be conducted to identify any pockets of systematically excluded populations from MDA e.g. prison inmates, forest workers. Xenomonitoring will also be conducted in order to complement the post-MDA surveillance.

6.5 Comprehensive Behaviour Change Communication

In the immediate term, the current malaria BCC strategy will be updated to include the culturally appropriate and gender response message and materials. In addition an aggressive strategy for supporting the transition to malaria elimination will be designed and rolled out in 2014. The strategy will emphasize the role of every Cambodian to work towards eliminating malaria and focus on the actions that need to be taken by every segment of the population i.e. forest workers, plantation and company workers, health care workers, school teachers, communities and individual households. The whole campaign will focus on creating a sense of national pride and accomplishment. BCC approaches to be pursued strategically will include both community outreach approaches such as interpersonal and group health education by village/plantation/company malaria workers, village health support groups and female change agent health educators, school malaria health education for teachers and pupils, child to child approach to reach out-of-school children, orientation of village, commune, operational district and provincial level key influencers, malaria health education training of mass media personnel, and use of traditional media such as participatory community theatre.

The main activity of the health education component in DHF-Chik control is to support the community- based vector control project in the training, production, implementation and evaluation of DHF-CHIK control activities. During the dengue transmission season, health education and communication will focus on mass media campaigns and mobile health education activities. All schools in target provinces will implement school-based dengue-chik control with active

collaboration with the School Health Department. Health education and communication strategies will be formulated by a focal group at the National programme level to give technical support and solicit the support of partners. The dengue- CHIK health education programme will also be seen as focal point in the education of staff of private hospital/clinics treating DHF. Key activities proposed as part of the National Dengue Strategy (2013-2017) are:

- Design, review and production of school based dengue-CHIK teaching curriculum.
- Collaborating with NGOs in the organization of anti-dengue- CHIK campaigns.
- Planning, coordinating and conduct public awareness campaigns through mass media and mobile health education networks on dengue-CHIK prevention measures and warning signs for early hospital seeking.
- Taking an active part in the development of a training forum and the production of training materials for community-based vector control projects.
- Assessing and evaluating community-based vector control activities.

Health education is an integral part of all interventions against helminths. However, much more will be done to improve IEC and effect desirable behavioural changes. Where feasible and when resources permit sanitation improvement will be attempted. Close collaboration with animal health sections will also be maintained, focussing on surveillance and control of FBT. Health education on hygienic eating practices and agricultural production processes will be stressed.

Social mobilization activities will be carried out along with MDA activities in the endemic districts and these will vary: school visits of health staff before and during the distribution day, production of banners and posters, community meetings organization, translation into minority languages of the information, distribution of information messages with megaphones or local radio.

6.6 Intensive Capacity Building

With more than 150 employees, CNM is one of the largest national health program organisations in Cambodia. Well trained, key staff

members have studied at reputable institutions in Cambodia and abroad. Among the staff at CNM there are: 1 PhD, 2 PhD candidates, 14 Masters, 2 MBAs and 4 BBAs.

Capacity building efforts will be intensified through needs-based (in-country and overseas) training courses, on the job mentoring, strengthening of the supervision system, monitoring progress against key performance indicators, targeted operational research, carrying out infrastructural improvements, improved coordination and developing broad-based and strengthened partnerships, mobilizing additional finances required to halt the progress of the epidemic by addressing strategic funding gaps, etc.

The DHF programme will strengthen the capacity to react appropriately and effectively to outbreaks both at the central level and in provincial health departments (PHDs) in 20-22 dengue high-risk provinces. PHD staff will undergo appropriate training in recognizing early signs of dengue-chik outbreaks using indicators or epidemiological thresholds at the local level predetermined by the epidemiological unit at the national level and how to report potential outbreaks to the central level in a prompt and accurate manner. Each province will have designated officials responsible for outbreak investigations, and will co-ordinate with a CDC team at the provincial level on outbreak investigation, including the use of rapid diagnostic tests and appropriate response activities.

6.7 Building sustainable partnerships (including PPM)

CNM will continue to build and sustain partnerships with donors, development partners as well as implementing partners drawn from public, private-not for profit and private-for-profit sectors in order to achieve the institutional objectives and goal in a timely, efficient and effective manner.

CNM has developed a robust long-term Public-Private Mix (PPM) strategy for malaria elimination and established a private sector working group which is steering the scaling up of the PPM approach. The main objective is to collect surveillance data, improve the rational use of anti-malarial drugs and improve malaria prevention efforts through the strengthening of the partnership between the public sector

and all types of private sector providers. Efforts will be made to strengthen the institutional capacity of the CNM and other relevant agencies in relation to PPM. CNM will liaise with stakeholders ranging from private sector leaders and providers to government agencies and civil society organizations to promote corporate responsibility towards achieving NMCP goals.

The community based vector control for dengue-CHIK fevers is based on a partnership with various NGOs, other government Ministries (Education Youth and Sport, Rural Development, Water supply, Environment and Local Government) and community organizations. A school-based dengue project will be expanded to all 22-24 high risk provinces with revised school curriculum. The National Control programme will take advantage of Cambodia's large network of both international and local NGOs with experience in a variety of activities including health promotion and environmental hygiene and sanitation.

Helminths are most often found in places with unsafe drinking water, poor sanitation and insufficient hygiene practices. Therefore, improvement of sanitary condition and hygienic practices of the target population is an integral part of helminthiasis control intervention. CNM will endeavour to create inter-sectoral linkages between the helminthiasis control programme and other programmes that aim at improvement of sanitation and wastewater treatment (e.g. The Ministry of Education, Ministry of Women Affairs, Ministry of Agriculture, Ministry of Rural Development, FAO, UNICEF, UNDP, etc.). While the MoH and CNM will take charge of medical and parasitological aspects of the helminthiasis control programme, the inter-sectoral network will make sure that the activities done by other programmes and sectors for improvement of sanitation and agricultural practices target at helminthiasis-endemic areas to exert simultaneous effects on elimination and control of helminthiasis.

6.8 Mobilising Required Resources

The NMCP has assured funding from the GFATM until the middle of 2015 when Single Stream of Funding grant is expected to come to an end. CNM intends to therefore apply as per the New Funding Model of the GFATM once the application process is initiated in 2013-2014. However, CNM's commitment to the NSPEM implies that more

resources will need to be mobilised from other potential donors such as the USAID, AUSAID, etc. in addition to the Ministry of Health.

The DHF programme will receive committed funding through ADB_CDC1-2 and WB_HSSP1-2 for the next five years. However, funding for the DHF-CHIK control programme is currently inadequate in terms of outbreak response.

The Helminths control programme will receive committed funding through WHO, USAID, ADB, Swiss TPH, etc. over the next few years but will need to mobilise funds to address current and future gaps particularly since the country is committed to successfully control and eliminate NTDs.

7. VALUES AND PRINCIPLES

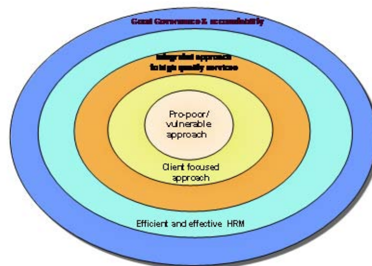
7.1 CNM's Values

In line with the values of the MoH enshrined in the HSP 2008-15, CNM's value-based commitments are *Equity* and the *Right to vector borne and parasitic disease diagnosis, treatment and prevention* for all Cambodians.

7.2 CNM's Working Principles

In line with the Working Principles of the MoH emphasized in the HSP 2008-15, the day-to-day activities of the director, vice-directors and staff in CNM will be guided by five **working principles** (see Figure 2).

Figure 2: NMCP's Working Principles



The Working Principles are:

i. social health protection, especially for the poor and vulnerable groups;
ii. client focused approach to service delivery for vector borne and parasitic diseases;
iii. integrated approach to high quality service delivery and public health interventions for vector borne and parasitic diseases;
iv. human resources management as the cornerstone for the control and elimination of vector borne and parasitic diseases; and
v. good governance and accountability.

8. STRATEGIC LINKAGES AND PRINCIPLES

Since reducing vector borne and parasitic disease mortality and morbidity is considered essential for accelerating growth and promoting social development in Cambodia, the main strategic objectives of the national programmes managed by CNM are completely aligned with broader country-level development frameworks, such as the Poverty Reduction Strategy Papers (PRSP), the Rectangular Strategy for Growth, Employment, Equity and Efficiency (RS), National Strategic Development Plan 2006-10 (NSDP) and Millennium Development Goals (MDG) as well as the Health Sector Strategic Plan 2008-15 (HSP2). Vector borne and parasitic disease control and elimination efforts in Cambodia directed through clearly articulated strategies will continue to play a vital role in helping the country reach the targets for its global commitments such as the Millennium Development Goals, particularly Goal # 6, the RBM Strategic Plan (2005-2015), the Global Malaria Action Plan (August 2008), the WHA resolution (1977) on primary health care, Global Plan for Artemisinin Resistance Containment (GPARC 2011), Regional Action Plan for Neglected Tropical Diseases in the Western Pacific (2012-2016), etc.