

F.No.Z-17013/1/2009-VBD
Government of India
Ministry of Health & Family Welfare
(Department of Health & Family Welfare)

To

All States/UTs

Subject: National Vector Borne Disease Control programme – Programme objectives, strategies and guidelines – regarding.

Sir,

The National Vector Borne Disease Control Programme (NVBDCP) is an umbrella programme for prevention and control of vector borne diseases viz., malaria, lymphatic filariasis, kala azar, Japanese encephalitis (JE), dengue/dengue hemorrhagic fever (DF/DHF) and chikungunya. Under the programme, comprehensive public health activities are being implemented in the country. As these activities are being carried out in the field by the states, technical guidelines for prevention and control of each disease have been issued from time to time. A brief on the programme objectives, strategy and guidelines are hereby issued to facilitate preparation of annual plans and monitoring the implementation of activities.

Programme objectives and strategies

The vector borne diseases pose an immense public health concern and are major impediments in the path of socio-economic development. The National Health Policy - 2002 has set the goals of achieving reduction of mortality on account of malaria and other vector borne diseases by 50% by the year 2010; elimination of kala-azar by 2010 and elimination of lymphatic filariasis by 2015.

The NVBDCP strategies comprise early case diagnosis, prompt and complete treatment; integrated vector management including promotion of personal protective measures like insecticide treated bed nets including LLIN, and biological control measures like larvivorous fish; behavior change communication, capacity building through integrated training at all tiers of health care service delivery system, monitoring and evaluation. Partnership with other national health programmes, non-health sector departments, civil society organizations (Non-Governmental Organizations/Faith Based Organizations/Community Based Organizations/Self-Help Groups/Panchayati Raj Institutions), corporate sector, medical academia and professional bodies is also an integral component of the programme. The objective of the partnership is to provide uniformity in diagnosis, treatment and monitoring through a wider base in the country to maximize access to treatment and improve acceptability of appropriate and locally suitable vector control measures.

Under the NVBDCP, the Government of India (GoI) provides technical support as well as logistics as per the approved pattern. The state governments ensure the programme implementation. The centre and the states monitor the programme closely and high-risk areas are identified for focused attention.

Malaria. The programme aims to maintain Annual Blood smear Examination Rate (ABER) of over 10% by active and passive surveillance and bring down the Annual Parasite Incidence (API) to 1.3 or less by 2012.

To strengthen the treatment, prevention, control and surveillance of malaria and other vector borne diseases, the GoI is providing cash assistance under the domestic head to the states for engaging multipurpose workers (MPWs) on contractual basis in about 200 identified high endemic districts during the XI Five Year Plan period.

Provision has been made under external assistance for positioning Malaria Technical Supervisors (MTS) in high endemic areas to strengthen supportive supervision and micro-level monitoring with emphasis on malaria diagnosis, treatment and prevention and control activities including residual spray and bed net impregnation, distribution and use. Each MTS will cover a population of around 2.50 lakhs (usually 2 blocks) in selected areas of the high endemic districts.

Under NVBDCP, all fever cases suspected to be malaria are required to be immediately examined and positive cases provided prompt and complete treatment. Incentives have been considered for ASHAs for performing Rapid Diagnostic Tests (RDTs), preparation of slides and administering complete treatment to malaria patients in the community in such identified districts. She can also arrange to transport severe malaria cases to the referral centers with the expenditure borne out of funds from untied grants of NRHM. The remuneration for activities carried out by ASHAs is to be paid on performance basis. Funds available with the Village Health and Sanitation Committee (VHSC) can also be utilized for this purpose in other districts. Provision has initially been made for only the 61 most malaria endemic districts in 11 states. The norms of incentives to ASHAs are given at Annexure – I. Incentive to ASHAs in other high endemic districts is also being considered. The untied grants available with the VHSC may be utilized for source reduction of mosquito breeding sites.

Lymphatic filariasis. The population living in endemic districts is now covered with annual Mass Drug Administration (MDA) with the aim of interruption of transmission to achieve elimination of lymphatic filariasis in the country by 2015. The earlier strategy of administration of single dose of DEC is being replaced by the co-administration of DEC + Albendazole. The manifestations of lymphoedema remains life long, however, the home based morbidity management of patients suffering from lymphoedema of limbs with simple washing will be augmented to prevent attacks of secondary bacterial infections. Patients suffering with hydrocele will be motivated for surgery. ASHAs and other volunteers, after due training, would be involved in MDA by the local health authority. Details of incentives to ASHAs and other volunteers are given at Annexure – I.

Kala azar. The annual incidence of kala azar will be reduced to less than 1 per 10,000 population at sub-district level with the aim of elimination of the disease in the country by 2010.

Kala azar Technical Supervisors (KTS) are being provided in the affected districts to strengthen early detection of kala azar cases and their complete treatment along with other activities for prevention and control including residual spray. This activity is being supported under the World Bank assisted project.

It is also proposed that ASHAs will be involved in identification of kala azar cases and ensuring their complete treatment. Details of incentives to ASHAs and other volunteers are given at Annexure – I.

Dengue, Japanese encephalitis and chikungunya. The prevention and control of dengue and JE are targeted at reduction of case fatality and the frequency of outbreaks. Similarly, prevention and control of chikungunya are aimed at the reduction in frequency of outbreaks. The untied funds available with the sub centres for referral of cases to district hospitals could be utilized for transportation of severe cases of dengue/JE/chikungunya to the identified referral centres.

GUIDELINES FOR PREVENTION AND CONTROL OF VECTOR BORNE DISEASES

A. MALARIA

1. Malaria is a parasitic disease transmitted by mosquitoes. Out of 4 human malarial parasites (*Plasmodium vivax*, *P.falciparum*, *P.malariae* and *P.ovale*), 2 types are common in our country; these are *Plasmodium vivax* and *Plasmodium falciparum*. *Plasmodium falciparum* is responsible for severe malaria resulting in death in the absence of early and appropriate treatment. The malarial parasites enter the human host when an infected female Anopheles mosquito bites the human being. Inside the human host, the parasite undergoes a series of changes as part of its complex life cycle. It infects the liver and the red blood cells and finally develops into a form that is able to infect a mosquito when the mosquito bites the infected person. The parasite undergoes changes in the mosquitoes and in about 10 to 14 days, these infected mosquitoes become capable of infecting another person. Malaria is primarily a local and focal disease. The disease distribution has been stratified in India according to the epidemiology and ecology as rural, urban, tribal, forest related, migrant malaria etc. The high malaria burden states in India are mainly the North Eastern states, Orissa, Chhattisgarh, Madhya Pradesh, Jharkhand, and parts of Maharashtra, Gujarat, Rajasthan, Andhra Pradesh, Karnataka, and West Bengal. Besides these, there are certain geographical areas in some states where malaria intensity is higher compared to other areas within the state, for e.g. in Tamil Nadu, where malaria is prevalent in urban areas, riverine pockets and coastal areas.
2. **Strategies:** The main strategies for prevention and control of malaria in India are:

Surveillance and case management

- Early Case detection (passive and active)
- Complete Treatment
- Sentinel surveillance

Integrated Vector Management (IVM)

- Indoor Residual Spray (IRS)
- Insecticide Treated bed Nets (ITNs) / Long Lasting Insecticide treated Nets (LLINs)
- Antilarval measures including source reduction

Epidemic preparedness and early response

Supportive Interventions

- Capacity building
- Behaviour Change Communication (BCC)
- Intersectoral collaboration
- Monitoring and Evaluation (M & E)
- Operational research and applied field research

An operational Manual for implementation of malaria control in India has been developed and provided to the states and union territories. The strategies are described below in brief:

Surveillance and case management:

The conventional diagnostic method of malaria through microscopy is still the gold standard; however, to provide quick treatment in difficult and inaccessible areas with

P.falciparum predominance, rapid diagnostic tests are done which immediately detect the presence of malaria cases (the Pf kits issued under the programme are specific for detection of only Pf) and facilitate treatment of the patient by the drug provider as per the national drug policy. The national drug policy for treatment of malaria cases provides the complete drug schedule for treatment of different species of malarial parasite in different age groups.

Integrated Vector Management covers the various methods for vector control in an integrated manner as indicated below:

- **Indoor residual Spray (IRS)** is done in areas which have been identified as high risk. Two rounds of DDT/synthetic pyrethroid or 3 rounds of malathion are done according to the insecticide policy in the area which is based on the insecticide resistance studies and epidemiological information. It is important to ensure that inside walls of all human dwellings are sprayed in the villages targeted for IRS and the sprayed walls are not mud plastered/white washed/painted for at least 10-12 weeks after each spray. Exclusively cattle sheds should not be sprayed.

Spray operations should be carried out directly in all areas with API 2 or above. However, the priority of spray should be given by the state governments to their 'High Risk' areas with API or SPR 5 and above.

The dosage of insecticides for application is given below:

Insecticide	Suspension ratio (Kg per 10 liters)	Dose per sq. meter of active ingredient	Residual effect (in weeks)	Number of rounds per year	Insecticide requirements per million population per year (in metric ton)	Area to be covered by 10 litre of suspension (in sq. m)
DDT 50% wp	1.000	1 gm	10 -12	2	150.00	500
Malathion 25% wp	2.000	2 gm	6 - 8	3	900.00	250
Deltamethrin 2.5% wp	0.400	20 mg	10 -12	2	60.00	500
Cyfluthrin 10% wp	0.125	25 mg	10 -12	2	18.75	500
Lambdacyhalothrin 10%	0.125	25 mg	10 -12	2	18.75	500
Alphacypermethrin 5% wp	0.250	25 mg	10 -12	2	37.50	500

- **Spray Timings:** The transmission season varies in different areas of the country. It starts from mid February in the North Eastern region and states like Karnataka while in other areas it generally starts from mid May or July. Accordingly, the spray schedule in different states commences at different times from mid-February to mid-May.
- **Training of spray squads:** The training of MPWs and the supervisors should be completed two weeks prior to the start of spray operations. The hiring of spray squads should be done well in time so that training of spray squads is completed by the trained supervisors prior to the due date of spray operations. Training should cover each aspect of the spray operations.
- **Insecticide Treated bed Nets (ITNs) / Long Lasting Insecticide treated Nets (LLINs):** The mosquitoes can be prevented from biting people by sleeping under mosquito nets (ordinary or insecticide treated/ LLINs). Most Malaria-carrying mosquitoes bite at night. Mosquito nets, if properly used and maintained, can provide a physical barrier to the mosquitoes. If treated with insecticide, the effectiveness of the nets is greatly improved, creating a chemical halo that extends beyond the

mosquito net itself. This tends to repel or deter mosquitoes from biting or shorten the life span of mosquito so that they cannot transmit malaria infection. The use of the bednets is promoted under the National Vector Borne Disease Control Programme as an effective integrated vector control strategy. Use of bednets in areas with high proportion of Pf cases and the hardcore malaria affected areas is particularly important.

- **Reduction of breeding sites:** Introduction of larvivorous fish that eat mosquito larvae controls the mosquito vector population. Use of larvivorous fish – Gambusia and Poecilia (Guppy) - is becoming increasingly important as an eco-friendly and effective bio- environmental measure for vector control. Although larvivorous fish have been used successfully in some parts of the country, it is important that their use is scaled-up substantially to achieve demonstrable positive impact. Individuals and communities can reduce mosquito breeding by the following activities:
 - Remove discarded containers that might collect water.
 - Cover cisterns (water tanks) with lids or mosquito nets.
 - Clear away or remove vegetation and other matter from the banks of streams to make the flow of water smooth and reduce breeding.
 - Eliminate the pools of water caused by leaking taps, spillage of water around pipes and wells or poor drains by repairing.
 - Use larvivorous fish in permanent water bodies with potential breeding sites

Epidemic Preparedness and Response (EPR)

Malaria is one of the epidemic prone diseases, specially in relatively low endemic areas with unstable transmission dynamics. Objectives of EPR are early identification and control of epidemic to prevent large scale morbidity and mortality. Early warning signals which include epidemiological & entomological parameters , climatic factors i.e. rain fall, temperature and humidity, operational factors i.e. inadequacy and lack of trained manpower , developmental projects with population congregation should be monitored. There should be proper linkage with Integrated Diseases Surveillance Programme (IDSP) at district level for obtaining early warning signals on regular basis. .

District should have rapid response team consisting of epidemiologist. Entomologist and laboratory technician,. The medical Officer, Health workers , supervisors , community volunteers of affected area should also be involved in epidemic response activities. All requisite logistic supports identified as buffer stock at the district level should readily be made available to the epidemic response team immediately at the time of requirement.

Supportive interventions

- **Training and capacity building:** An integrated training programme have been designed for different categories of health care functionaries in consultation with the experts from medical colleges and from the fields of vector borne diseases. This Integrated training programme aims to conduct training at three levels – tertiary, secondary and primary. The integrated training guidelines aim to standardize the training contents for each category of the health care workers as well as non health care functionaries in order to improve the quality of training and to improve in delivery of services. For this purpose integrated course curriculum has been developed for all three categories. Besides, training of Private Medical Practitioners and other inter-sectoral partners are also conducted to sensitize them about the National Strategies for VBD control. Specialized trainings for entomologists and laboratory technicians are also conducted through some identified Apex Institute having expertise on the concerned field. The capacity building at state, district and PHC level need to be

planned and continued to keep the well trained human resource available with the programme for programme implementation.

- **Behaviour Change Communication:** Behaviour Change Communication (BCC) initiative has been introduced that empowers people to take rational and informed decisions through appropriate knowledge; inculcates necessary skills and optimism; facilitates, stimulates pertinent action through changed mindsets, modified behavior and reinforces the same through peers and influencers. The activity of IEC and BCC together needs to be promoted and sustained.
 - **Intersectoral Collaboration** is the key to successful programme implementation and efficient community participation. Anti Malaria Month is being observed to focus on this aspect with enhanced level of campaigning just before the peak transmission season. The collaboration so initiated is then continued on perpetual basis to achieve effective prevention and control of malaria across the country.
 - **Public Private Partnership:** Partnership with private sector, Non-Governmental Organizations (NGOs), Faith Based Organizations (FBOs), Community Based Organizations (CBOs) and Local self-government (Panchayat/Village Councils/Tribal Councils, etc.) is being promoted under NVBDCP. The separate guidelines has been developed by NVBDCP and circulated to the states, however, the brief is at Annexure-III.
 - The required amendments are also incorporated from time to time depending on the situation and response of the parasite to anti-malarial and the Vector mosquitoes to insecticides, as well as response of the community towards their involvement in utilizing Public Health services and reducing the creation of man-made mosquito breeding sites. Following innovations/modifications have been proposed to be intensified during XI Five Year Plan including the strengthening of implementation of existing strategy for prevention and control of vector borne diseases:
 - Linkage with NRHM and use of NRHM Institutions for prevention and control of VBDs
 - Early diagnosis and treatment by
 - Strengthening of human resource
 - Scaling up of Rapid Diagnostic Kit (RDK)
 - Scaling up of Artemisinin-based Combination Therapy (ACT)
 - For focused interventions, 206 districts have been identified as high malaria endemic. Of which 100 districts are with high API and Pf more than 30%. Further out of 100 districts, 61 districts are prioritized as very high malaria endemic districts.
 - Geographical Information System (GIS) mapping for focused intervention in high risk prioritized districts
 - Upscaling use of bed nets /Long Lasting Insecticide Treated Nets (LLIN)
3. **Monitoring of Drug and Insecticidal Resistance:** Therapeutic efficacy of anti-malarials is being monitored by conducting 15 studies in a year through Pf monitoring teams at ROH&FWs and NIMR in different places. Based on their report, the resistance areas are identified for changes in drug policy. Insecticide resistance is being monitored through susceptibility tests by state entomological teams and teams of NIMR. The policy for insecticide use in an area is revised based on the studies on susceptibility to particular insecticides and epidemiological impacts. These are implemented after the proposal is approved by Technical Advisory Committee (TAC) under the Chairmanship of DGHS.
4. **External Assistance.** In identified high Malaria endemic districts, the implementation of activities are being intensified and also external support is being provided for additional

inputs to strengthen the system. The externally assisted projects are being implemented under NVBDCP and activities supported by these projects are given as under:-

Global Fund Supported Project "Intensified Malaria Control Project (IMCP)" is being implemented in 106 districts of 10 states (Annexure-II) for a period of 5 years from July 2005 to June 2010. For areas under GFATM project the additional support is provided for 5 activities which are listed below:

- Provision of Rapid Diagnostic Kits for early diagnosis at community level, mainly through ASHAs
- Provision of Artemisinin combination therapy (ACT) for *Pf* cases
- Additional manpower for strengthening supervision and monitoring
- Provision of Insecticide Treated Nets/ LLINs for identified high endemic areas
- Treatment of community owned bednets with insecticides.

World Bank assisted National Vector Borne Disease Control Support project on Malaria Control and Kala-azar elimination is effective from 6th March 2009, though the project implementation activities has been started from August 2008 for a period of five years (2008-09 to 2012-13). The World Bank project for malaria control is being implemented in two phases in 93 districts of 10 states. Phase-I will cover 50 most malaria endemic districts in 5 states, namely, Andhra Pradesh, Chhattisgarh, Jharkhand, Madhya Pradesh and Orissa and 46 Kala-azar affected districts in three states namely Bihar, Jharkhand & West Bengal. From the 3rd year onwards, Phase-II of the programme will extend to the remaining 43 more malaria endemic districts of Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Gujarat, Maharashtra, and Karnataka (Annexure-IV). The project will support the following components:

- Improving access to and use of services for control of malaria
 - Improving malaria case management
 - Strengthening malaria surveillance
 - Effective vector control
- Improving access to and use of services for elimination of kala azar
 - Improving kala azar case management
 - Strengthening kala azar surveillance
 - Effective vector control
- Policy and strategy development
 - Programme management and capacity building
 - Monitoring and evaluation

5. Staffing Pattern

At the state/district level, the staff proposed in modified plan of operation vide MOHFW letter No.T.14014/7/76-C&CD/Mal. Dated 23.11.1976 should be sustained. At the state level there should be one full time dedicated State Programme Officer of the rank of Joint Director/Deputy Director for vector borne diseases including Malaria, filariasis, kala-azar, JE, dengue and chikungunya. He should be supported with one Deputy Director, one Assistant Director and State Entomologist/Chief Entomologist. One state level central malaria laboratory for quality check and assurance should be maintained and this laboratory should be supported with microscopist/lab. Technician, Insect Collector and other support staff.

Following minimum staff requirement for each district were recommended in MPO:

- District Malaria Officer - 1