NATIONAL VECTOR BORNE DISEASE CONTROL PROGRAMME

1. Background

The National Vector Borne Disease Control Programme (NVBDCP) is an umbrella programme for prevention and control of vector borne diseases (VBD), viz., Malaria, Lymphatic Filariasis, Kala-azar, Dengue, Chikungunya and Japanese Encephalitis (JE). These diseases pose major public health problems and hamper socio-economic development. Generally the rural, tribal and urban slum areas are inhabited mostly by low socio economic groups which are more prone to VBDs and are considered as high risk groups.

National Vector Borne Disease Control Programme (NVBDCP)

About 75 million malaria cases and 0.8 million deaths were estimated annually during pre-Independence era. Malaria morbidity and mortality had affected agriculture, industrial development and national economy. Repeated attacks of malaria are responsible for deterioration in mental and physical capabilities resulting into enormous loss of productive man days. Global experience in malaria control and availability of the cost-effective intervention measures for malaria control with use of insecticides in fifties indicated that with their effective and efficient use, malaria could be controlled or even eradicated within a short period. Considering this concept, a centrally sponsored National Malaria Control Programme (NMCP) was launched in 1953 for malaria control in high endemic areas which was modified in 1958 to a countywide National Malaria Eradication Programme (NMEP) in view of spectacular success of NMCP. The success achieved in preventing deaths due to malaria and also reducing annual malaria incidence to an all time low of 0.1 million cases by 1965 could not be sustained for various technical, administrative and financial constraints. Resurgence of malaria became noticeable in 1976 with 6.47 million cases that necessitated launching of the Modified Plan of Operation (MPO) in 1977 with the immediate objectives to prevent deaths and to reduce morbidity due to malaria. Modified Plan of Operation successfully brought down annual incidence of malaria from 6.47 million (0.85 million P. falciparum) in 1976 to 2.18 million cases (0.65 million P. falciparum) by 1984. The developmental activities like rapid unplanned urbanization, construction, river valley projects, mega-industry, irrigation projects, etc. with deficient water management and inadequate mosquito control provisions again led to increased malaria incidence. Migration of population from endemic to other areas on account of such developmental projects also increased malaria transmission.

The country-wide resurgence of malaria was again experienced in 1994 which led to high level review by the then Prime Minister on 5th December,1994. In pursuance with the review of programme, an Expert Committee was constituted which submitted its report on 27th January, 1995. Based on the recommendations of the Expert Committee, a Malaria Action Programme (MAP) 1995 was drawn up and sent to the states and UTs for prioritizing the high risk areas and implementation of strategy accordingly. The cases were reduced to around 2.5 to 3 million annually.

To tackle malaria problem in high risk areas other than North-Eastern (NE) states, an “Enhanced Malaria Control Project (EMCP)” with the assistance of World Bank was implemented during 1997-2005 with additional inputs of human resource,
effective insecticidal spraying and IEC/BCC activities along with capacity building. The malaria incidence reduced in the project areas significantly. The strategies were focused on control of malaria, hence, the programme was changed from NMEP to National Anti Malaria Programme (NAMP) during the year 1998. To sustain the impact of this project, 93 high-endemic districts in 8 states have been identified for additional inputs through World Bank assisted Project in 2008 for a period of five years which is being implemented from March 2009.

In North Eastern states, malaria control activities were intensified with additional inputs provided under Global Fund supported Intensified Malaria Control Projects from July 2005 to June 2010. These initiatives have been extended by another Global Fund supported project for a period of five years to cover all the districts of seven North-Eastern States.

The prevention and control of other vector borne diseases namely Lymphatic Filariasis, Kalaazar, was also being dealt by the Directorate of NAMP in addition to need based support for Japanese Encephalitis and Dengue. In view of synergies in prevention & control of vector borne diseases including Japanese Encephalitis and Dengue, the programme was renamed as National Vector Borne Disease Control Programme in the year 2003 with the integration of three ongoing centrally sponsored schemes viz., NAMP, NFCP and Kala-Azar Control Programme and converging prevention and control of JE and Dengue. In the year 2006, Chikungunya re-emerged in country and was also brought under purview of this Directorate since 2006.

1.2. The Urban Malaria Scheme (UMS)

The implementation of control measures under erstwhile ‘NMEP’ showed reducing malaria incidence in rural areas in the country till 1965, but at the same time increasing trend of malaria was observed in some towns/cities as a result of which, Madhok Committee (1969) reviewed the problem and found that 10 urban areas in Andhra Pradesh and Tamil Nadu contributed 11.2% of the total malaria cases in the two states during 1963. The Committee felt that if effective antilarval measures were not undertaken in urban areas, the proliferation of malaria cases from urban to rural areas might spread in a bigger way in many states and recommended central assistance adequately for tackling the programme. Accordingly the ‘Urban Malaria Scheme’ was approved during 1971 as 100% centrally sponsored scheme which from 1979-80 was changed to 50:50 sharing basis between centre and state governments. The UMS scheme was scaled up in phased manner by including 23 towns in 1971-72; 5 in 1972-73; 87 in 1977-78; 38 in 1978-79; 12 in 1979-80 and 17 in 1980-81 making a total towns of 182. Since states have the responsibility of providing human resource and infrastructure, the scheme could be implemented only in 131 towns for which GoI is supplying anti-larval. The drugs are made available through states. At present Urban Malaria Scheme is protecting about 116 million population from malaria and other mosquito borne diseases in 131 towns.

1.3 The National Filaria Control Programme (NFCP)

The programme was launched in 1955 to delimit the problem and implement the treatment of microfilaria carriers and disease cases with Diethylcarbamazine tablets along with anti-larval measures in urban areas. Filaria is endemic in 20 States/UTs except Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland,
Tripura, Sikkim, Jammu & Kashmir, Himachal Pradesh, Haryana, Punjab, Chandigarh, Rajasthan, Uttarakhand and Delhi and NFCP activities are implemented through 206 control Units, 199 Filaria Clinics and 27 Filaria Survey Units located in urban areas of endemic states. The programme has undergone various paradigm shifts and revised the strategy. Currently the disease has been targeted for elimination which is defined as “Elimination is achieved when Lymphatic Filariasis (LF) ceases to be a public health problem, when the number of microfilaria carriers is less than 1% and the children born after initiation of elimination activities are free from circulating antigenaemia (presence of adult filaria worm in human body)”. The strategy of elimination is interruption of transmission by annual Mass Drug Administration (MDA) with anti-filarial drugs to entire population living at risk of LF, which is being implemented in 250 LF endemic districts since 2004. The anti-larval operations in 206 towns covered under NFCP is continued and the budget of NFCP merged with UMS for this support.

1.4. Kala-azar was highly endemic in India during pre-DDT era and had affected economic growth of country due to its high morbidity and mortality rates. Cyclic epidemics used to occur with an inter-epidemic period of about 10 years or more. With the launching of extensive insecticidal spraying under National Malaria Control Programme/National Malaria Eradication Programme since 1953 and 1958 respectively, the disease declined to negligible proportion due to collateral benefit of insecticidal pressure on the vector, Phlebotomus argentipes, with consequent interruption of transmission. However, there was resurgence in the sixties and by seventies the disease established itself in endemic form in Bihar followed by West Bengal. In the absence of any organized control activity, the disease slowly spread to several areas in these states. Considering the seriousness of the problem, centrally sponsored Kala-azar Control Programme was launched in the year 1990-91. The disease has also been targeted for elimination by 2015 as per tripartite agreement between India, Nepal and Bangladesh. Various initiatives have been taken towards elimination of the disease.

1.5. Dengue, Chikungunya and JE: For prevention and control of these viral diseases, there were no separate programmes but need based assistance and technical supports were being provided by the Directorate. However, during 11th Plan period, separate budgeting was planned and various initiatives were taken to control out breaks and contain the disease by strengthening surveillance, diagnosis, case management and awareness etc.

1.6. Entomological surveillance

The three important component of disease transmission are causative organism (parasite or pathogen), human being as host and the transmitting agent – the vector. Not all the mosquitoes transmit the disease, hence the knowledge about capacity to transmit disease and their predominance in terms of time and space are very crucial to facilitate the decision about their control strategies. Entomological surveillance covers all these aspects and for such entomological surveillance, 72 zonal malaria offices were established in the country with support of entomologists, insect collectors and support staff. The expenditure on this infrastructure is met by the States from state resources. In addition, 16 Regional Offices for Health & FW, GoI were also equipped with entomologists for carrying out entomological activities in addition to other public health activities. Gradually, due to non adherence of due importance to the entomological work, the progress on entomological surveillance has suffered, though some states like Tamil Nadu, Andhra Pradesh, Gujarat and Maharashtra etc. have attached more importance on
zonal teams and strengthened them with entomologists and infrastructure. Presently out of 72 zones, only 50% are functional. To generate latest information about various entomological parameters in the country for revising prevention and control activities against vectors at national, state and local level, the entomological zones need to be strengthened with additional human resource and infrastructure with basic minimum facilities like mobility support for field visits etc.

1.7 Objectives under NVBDCP: During XI Plan, the following objectives were enlisted:

- To prevent mortality due to Vector Borne Diseases namely Malaria, Kala-azar, Dengue/DHF and Japanese Encephalitis
- To reduce morbidity due to Malaria, Dengue/DHF, Chikungunya and Japanese Encephalitis
- Elimination of Kala-azar and Lymphatic Filariasis.

Towards reducing the burden of vector borne diseases and paving the way for healthy and socio-economically developed nation, the Government of India (GoI) in its National Health Policy (2002) has envisaged the goal to reduce mortality on account of malaria, dengue and Japanese encephalitis by 50% by 2010, elimination of Kala-azar by 2010 and elimination of lymphatic filariasis by 2015. Millennium Development Goal is also to reduce morbidity and mortality on account of malaria. The programme has also been subsumed under National Rural Health Mission (NRHM) to improve the availability of services and access to health care to people, especially for those residing in rural areas, the poor, women and children.
2. Status of National Vector Borne Disease Control Programme during XI Plan

2.1 Malaria

2.1.1 Objectives:

- To reduce malaria morbidity & mortality by 50% by 2012 (Base line 2006).

2.1.2. Targets and indicators

   **Targets**
   - ABER over 10%.
   - API 1.3 or less.
   - 25 per cent reduction in morbidity and mortality due to malaria by 2010 and 50 per cent by 2012.

   **Indicators**
   - Percentage of blood smears examined from population under surveillance during the year.
   - Number of laboratory confirmed malaria cases per 1000 population (API).
   - Number of malaria deaths per 100,000 population.

2.1.3 Strategy to achieve the objectives of XI Plan Period was as follows:

The basic approach for vector borne disease control involves a strategy directed against the parasite and vector, and to enlist involvement of community in practising various preventive measures. Based on this concept following major strategies were adopted under the National Vector Borne Disease Control Programme during the XI Plan Period.

- **Disease Management**
  - Early case detection and complete treatment
  - Strengthening of referral services
  - Epidemic preparedness and rapid response

- **Integrated Vector Management (For Transmission Risk Reduction)**
  - Indoor Residual Spraying in selected high risk areas
  - Use of Insecticide treated bed nets and Upscaling of long lasting insecticidal nets in last two years of XI plan
  - Use of Larvivorous fish
  - Anti larval measures in urban areas including biolarvicides
  - Minor environmental engineering

- **Supportive Interventions:**
  - Behaviour Change Communication and IEC activities
  - Public Private Partnership & Inter-sectoral convergence
  - Human Resource Development and capacity building
  - Operational research including studies on drug resistance and insecticide susceptibility
  - Monitoring and evaluation
The Government of India provides antimalaria drugs, insecticides and larvicides under the National Vector Borne Disease Control Programme. The programme is implemented and monitored by the state health authorities. The operational cost including the wages for contractual labour for spraying are borne by the state governments except North-Eastern states and UTs. Certain commodities are to be met out of state resources. Recently the drugs and larvicides have been decentralized for which Govt. of India provides cash assistance but state governments have to procure themselves. DDT procurement & supply still remains with Gol. In addition, the commodities to be supplied under externally assisted projects are also procured and supplied by Gol to the identified states/districts. Cash grant is also provided by Gol to the states/UTs for various preparatory activities and towards the salary of contractual human resource.

2.1.4 Initiatives and achievements:

• **Human Resource:** To intensify the programme activities, the efforts were made to bridge the gaps especially to strengthen surveillance diagnosis and treatment. Additional human resource of various categories was provided to high malaria endemic states on contractual basis. These categories were state and district level consultants, malaria technical supervisors (MTS), Kala-azar Technical Supervisors (KTS), Lab. Technicians (LTs) and Male Multipurpose Workers (MPWs). The externally aided projects also supported such endeavors and therefore in the states supported under World Bank and Global Fund Projects, the above mentioned categories except male MPWs were provided. The male MPWs were provided out of Govt. of India fund to high malaria endemic states. To handle the project activities and its monitoring, the human resource viz., National Consultants with support staff were also provided at central level. The expertise of these consultants was also utilized for activities supported under domestic funding as ad-hoc arrangement. However, the real need of programme in whole country needs to be addressed from domestic funding.

• **ASHAs** were involved for diagnosis and treatment for which they have been trained. So far about 3.5 lakhs ASHAs have been trained and involved in malaria diagnosis and treatment, especially in Pf predominant areas.

Such newly engaged personnel were given orientation on programme activities and specific to their job for which they were engaged. Their capacity building was taken up in addition to regular training programmes for various categories in the States.

• **Surveillance & Diagnosis:** The surveillance for malaria is carried out through active agencies where health workers approach patients and through passive agencies where patients approach health facilities. Active surveillance has been affected due to shortage of male health workers (state’s responsibility), however, in high malaria risk areas contractual male multipurpose health workers were provided during XI plan period by GOI. Many public health facilities (PHCs, Block PHCs & CHCs) in rural areas through inputs under NRHM in last few years have undergone major changes to provide certain minimum health facilities required in rural areas, thereby attracting the community comparatively more. The passive surveillance therefore has also increased due to large number of people approaching to these peripheral health institutions where doctors and LTs are present. The involvement of ASHAs in surveillance, diagnosis and treatment of Pf malaria cases in high risk areas was found a feasible solution to overcome the shortage of male MPWs.
Initially for the involvement of ASHAs, 61 districts were identified during XI plan but later based on the field experience ASHA’s involvement was expanded to 257 districts after recommendation of Empowered Programme Committee (EPC) of NRHM and approval by Mission Steering Group (MSG) in 2010.

- With these initiatives, the number of persons screened for malaria through blood slide (microscopy) and through RDT has been around 95 million, thereby maintaining the annual blood examination rate around 9.2% against the target of 10%. The RDT was scaled up in last two years of XI plan and about 14 million out of 95 million fever cases are screened per year through RDT. Presently the RDTs used in the programme is for detection of only Pf cases which if not detected and treated timely, becomes fatal.

To strengthen the surveillance further, additional sentinel sites at district hospitals/Medical Colleges are being established in these districts covered under externally assisted projects.

Malaria clinics, dispensaries and hospitals are also involved in passive surveillance in urban areas the reports of which are collected and compiled in the respective districts. In addition, certain private hospitals, medical colleges and malaria clinics at Regional Offices for Health & FW, GoI also screen the suspected fever cases visiting these institutions and after diagnosis, provide the treatment. These records are also collected by the States and incorporated in their report. Efforts have been made to intensify by training Lab. Technicians of such institutions.

- **Treatment:** The conventional treatment protocol of vivax and falciparum malaria has been revised and during XI plan the revised treatment protocol with 14 days radical treatment of vivax malaria and treatment with artemisinin based combination therapy (ACT) against falciparum malaria has been implemented. The use of ACT was upscaled due to emergence of chloroquine resistance in P.falciparum cases. The drug resistance is being monitored regularly by 13 existing teams located at different Regional offices for Health & FW (GoI). However, since these teams were formed out of project staff and were merged in the year 1995 in pursuance to the order of Supreme Court with the condition that these posts will not be created after the retirement of project staff, hence these posts can not be filled up. The support of National Institute of Malaria Research Centre (NIMR) of ICMR was initiated to generate more data.

- **Vector Control:** Under integrated vector control initiative, Indoor Residual Spraying (IRS) is implemented selectively in high risk areas taking sub-centres as a unit. Over the years, targeted population for IRS has been reduced in view of paradigm shift to alternative vector control measures like use of insecticide treated nets/long lasting insecticidal nets. During 2006, 65.11 million population was covered with IRS which during XI plan period is ranging between 50-70 million population. Initiatives have been taken to strengthen the supervision of IRS by deputing central officers to the field during the spray season.

During initial years of XI plan, Insecticide Treated Nets (ITNs) was promoted but in the later phase of XI plan period, use of long lasting insecticidal nets (LLINs) have been upscaled. Till date, 4.51 million bed nets and 4.81 million LLINs have been supplied. In 2011 additional 6.58 million would be supplied.

- **Legislative measures:** The strict implementation of civic bye-laws and building bye-laws by the enforcement agencies were taken up to prevent the development of mosquitogenic potential in urban areas. States have been emphasized to initiate the implementation of such acts wherever available and
other states to start the process of formulation and enactment of such bye-laws.

- **World Bank supported Enhanced Malaria Control project** was implemented in 1045 PHCs in 100 districts of 8 states (Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh Maharashtra, Rajasthan and Orissa) predominantly inhabited by tribal population and were provided 100 per cent support towards operational expenses from 1997 to 2005. The World Bank Mission 2005 had rated programme of EMCP as satisfactory although much more improvements were still desirable especially in States like Orissa & Jharkhand. In the EMCP areas, reported cases have shown decline from 1.19 million in 1997 to 0.65 million in 2004 (45% decline) and deaths due to malaria have declined from 539 to 226 (58%). The Pf cases reduced from 0.72 m to 0.41 m (43%). Out of 100 Districts, 48 have shown Annual Parasite Incidence (API) of 2 or less.

The World Bank is again assisting the programme through the **National Vector Borne Disease Control Project (2008–2013) for malaria control activities** to cover a population of about 185 million in 93 districts of 8 states i.e. Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Orissa and Karnataka. Under the project following additional inputs are being provided to states:

- **Human Resources** including State level M&E, Finance, Training, IEC/PPP, Logistic & Procurement consultants; at district level one VBD consultant for each project district; at sub-district level Malaria Technical Supervisor (MTS) and Laboratory technicians for Sentinel site hospitals.
- **Logistic support** including RDT, ACT, Artether injections, LLIN and mobility support for monitoring and supervision. In addition, support for training, BCC and Vulnerable Community Plan (VCP) to ensure service delivery has also been extended through different agencies.

- **Global Fund supported Intensified Malaria Control Project (IMCP)** in 10 states (7 NE States & selected high risk areas of Orissa, Jharkhand and West Bengal) has been implemented since 1st July 2005 with the objective to increase access to rapid diagnosis and treatment in remote and inaccessible areas, reduce malaria transmission risk by use of insecticide treated bed nets (ITNs) and enhance community awareness about malaria control and promote community, NGO and private sector participation. The goal set in the project has been achieved in the project areas.

To intensify anti-malarial activities in the high endemic districts Global Fund supported another project for 5 years has been approved for 86 districts of N.E states except Sikkim. Under Global Fund supported project, following inputs are being provided:

a. **Human resource** including State level Project Coordinator, M&E, Finance and IEC consultants; District VBD consultants, Malaria Technical Supervisors (MTS) and Laboratory technicians.

b. **Logistic support** including commodities like RDT, ACT, Artether injections, Insecticide treated nets with insecticide for treatment, LLINs and support for monitoring and evaluation.

- **Monitoring** has been strengthened with the support of additional human resource made available under external assistance.
a. The involvement of ASHAs necessitated data recording from Village level on RDT and blood slide collection. The monitoring formats were accordingly revised.

b. During XI plan period, external evaluation of programme was done in World Bank and GF supported projects during 2008 and 2010.

c. Monitoring of disease trend through sentinel sites has been strengthened which is being intensified in many states.

d. Monitoring of implementation of project and programme activities has been further strengthened by introducing Lot Quality Assurance Sampling Survey methodology for selected activities like use of LLINs etc.

e. Monitoring of financial management in World Bank project has been strengthened through Agencies for fiduciary review. Similarly, monitoring of logistics has been undertaken by other agency especially for supply chain management.

- **Operational Research:** To monitor the drug resistance, pharmaco-vigilance, quality assurance and insecticide resistance the operational research studies were initiated in 2008 with the help of NIMR under the funding of World Bank. More than 15 sites have been selected throughout the country for these studies in association with NIMR.

- **Involvement of NGO/Private Sector/Community/Local Self Government:** In addition to involvement of local NGOs in bednet distribution, social mobilization, CARITAS – a consortium of NGOs has been involved in implementation of the programme activities under GF supported IMCP-II in NE States.

- **Quality Assurance on Laboratory Diagnosis:** Microscopy and newer rapid diagnostic are being used across the country for diagnosis of malaria. Guidelines for Quality Assurance on Microscopy and RDT were prepared during the 11th Five Year Plan which are being followed.

- **Behaviour Change Communication:** Community based approach and strategies were developed to facilitate change in behaviour and life style of people related to prevention and control of malaria. NGOs in high-risk areas were also involved to enhance the BCC activities. Every year, June is observed as Anti-Malaria Month during which the IEC and BCC activities are intensified.

### 2.1.5. Current situation of Malaria in the country

The malaria situation in India has steadily decreased during the past decade with the number of reported cases being around 1.5 million with about thousand deaths annually at present. The countrywide malaria situation from 2001-2010 is given in Table: 1.
Table 1: Countrywide Epidemiological Situation (2001 – 2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Malaria Cases (million)</th>
<th>P.falciparum cases (million)</th>
<th>PI %</th>
<th>API</th>
<th>Deaths due to malaria</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>2.09</td>
<td>1.01</td>
<td>48.20</td>
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<tr>
<td>2002</td>
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<td>2003</td>
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<td>2005</td>
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<td>0.78</td>
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</table>

*Provisional

API: Annual Parasite Incidence (cases per thousand population per year), Pf: Plasmodium falciparum

Comparative status (2010 Vs 2006) of distribution of districts based on API

The API wise distribution of districts in 2006 and 2010 given in the following table shows that the number of districts with API >10 has decreased from 52 in 2006 to 46 in 2010 and the number of districts with API <1 has increased from 374 in 2006 to 444 in 2010.
<table>
<thead>
<tr>
<th>SN</th>
<th>Name of the State</th>
<th>Number of Districts with API</th>
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<td></td>
<td>&gt;10</td>
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<td>27</td>
<td>Uttar Pradesh</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>28</td>
<td>West Bengal</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29</td>
<td>A &amp; N Islands</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>Chandigarh</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>D &amp; N Haveli</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32</td>
<td>Daman &amp; Diu</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33</td>
<td>Delhi</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>34</td>
<td>Lakshdweep</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>35</td>
<td>Pondicherry</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| All India | 52 | 27 | 80 | 71 | 377 | 46 | 34 | 41 | 70 | 444 |

Table 2: API wise distribution of Districts in 2006 and 2010
Table 3: Epidemiological Indicators for Malaria in India (2001-10)

<table>
<thead>
<tr>
<th>Year</th>
<th>Blood Smear Examined</th>
<th>Positive cases</th>
<th>Pf Cases</th>
<th>ABER</th>
<th>API</th>
<th>SPR</th>
<th>SFR</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>90,389,019</td>
<td>2,085,484</td>
<td>1,005,236</td>
<td>9.18</td>
<td>2.12</td>
<td>2.31</td>
<td>1.11</td>
<td>1005</td>
</tr>
<tr>
<td>2002</td>
<td>91,617,725</td>
<td>1,841,229</td>
<td>897,446</td>
<td>9.04</td>
<td>1.82</td>
<td>2.01</td>
<td>0.98</td>
<td>973</td>
</tr>
<tr>
<td>2003</td>
<td>99,136,143</td>
<td>1,869,403</td>
<td>857,101</td>
<td>9.65</td>
<td>1.82</td>
<td>1.89</td>
<td>0.86</td>
<td>1006</td>
</tr>
<tr>
<td>2004</td>
<td>97,111,526</td>
<td>1,915,363</td>
<td>890,152</td>
<td>9.33</td>
<td>1.84</td>
<td>1.97</td>
<td>0.92</td>
<td>949</td>
</tr>
<tr>
<td>2005</td>
<td>104,143,806</td>
<td>1,816,569</td>
<td>805,077</td>
<td>9.62</td>
<td>1.68</td>
<td>1.74</td>
<td>0.77</td>
<td>963</td>
</tr>
<tr>
<td>2006</td>
<td>106,725,851</td>
<td>1,785,129</td>
<td>840,360</td>
<td>9.95</td>
<td>1.66</td>
<td>1.67</td>
<td>0.79</td>
<td>1707</td>
</tr>
<tr>
<td>2007</td>
<td>94,928,090</td>
<td>1,508,927</td>
<td>741,076</td>
<td>8.73</td>
<td>1.39</td>
<td>1.59</td>
<td>0.78</td>
<td>1311</td>
</tr>
<tr>
<td>2008</td>
<td>97,316,158</td>
<td>1,526,210</td>
<td>775,523</td>
<td>8.69</td>
<td>1.36</td>
<td>1.57</td>
<td>0.80</td>
<td>1055</td>
</tr>
<tr>
<td>2009</td>
<td>103396076</td>
<td>1,563,574</td>
<td>839,877</td>
<td>8.99</td>
<td>1.36</td>
<td>1.51</td>
<td>0.81</td>
<td>1144</td>
</tr>
<tr>
<td>2010*</td>
<td>106040223</td>
<td>1,495,817</td>
<td>779,549</td>
<td>9.21</td>
<td>1.30</td>
<td>1.41</td>
<td>0.74</td>
<td>767</td>
</tr>
</tbody>
</table>

*Provisional

ABER: Annual Blood Smear Examination Rate (percentage of blood smears examined in a year of total population)

SPR: Slide positivity Rate (includes confirmed by RDT)

SFR: Slide *falciparum* Rate (includes confirmed by RDT)

**Fig. 3 Trend of Malaria cases, Pf cases and Deaths due to malaria from 2000 to 2010.**

The data in Table 3 shows that Annual Parasite Incidence rate has consistently come down from 2.12 per thousand in 2001 to 1.30 per thousand in 2010 but confirmed deaths due to malaria have been fluctuating during this period between 1707 and 767. The table No.3 shows the information on indicators by which malaria prevention/ control activity in India are monitored and evaluated. Slide
Positivity Rate (SPR) and Slide Falciparum Rate (SFR) have reduced over the years from 2001 to 2010. It is also observed that ABER has remained within 9.95% to 8.73% during that period.

Fig 3 shows that the cases have consistently declined from 2.08 million to 1.50 million during 2001 to 2010. Similarly Pf cases have declined from 1.0 to 0.78 million cases during the same period. Less than 2000 deaths were reported during all the years within this period with a peak in 2006 when an epidemic was reported in NE States. The country SPR has declined from 2.31 to 1.41 and SFR has declined from 1.11 in 2001 to 0.74 in 2010. This indicates declining trend of malaria in the country.

However, the actual burden may be more because a large number of cases may be reporting to private health providers who do not report the cases to the programme. The Government of India recently has started rapid scale up of newer malaria control interventions, namely Rapid Diagnostic Test (RDT), Artimisinin based Combination Therapy (ACT) and Long Lasting Insecticidal Net (LLIN). The scaling up of these interventions is one of the biggest opportunities to have a significant impact on malaria mortality and morbidity.

The programme is being implemented through out the country by the states and union territories under the technical guidance of the Directorate of National Vector Borne Disease Control Programme (NVBDCP). Over the past decades the problem of malaria has been effectively controlled in many parts of the country. At present, 80% of burden of disease in the country is confined to the most remote and inaccessible areas spread across the North Eastern States, Orissa, Jharkhand, Chhattisgarh and some districts of West Bengal, Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, and Andhra Pradesh. The most potent malaria vectors are prevalent in these areas warranting intensive inputs.

The Govt. of India is providing 100% central assistance to the North Eastern States for malaria control activities including provision of bed nets and spray wages. The Enhanced Malaria Control Project (EMCP) with World Bank assistance was implemented during 1997 – 2005 in 100 districts of eight high malaria incidence states. The World Bank is assisting the programme again through the National Vector Borne Disease Control Project (2008 – 2013) for malaria control activities to cover a population of about 185 million in 93 districts of 8 states i.e. Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Orissa and Karnataka. The Intensified Malaria Control Project (IMCP) - I funded by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) was in operation during 2005–10 in 106 districts covering the entire 7 North Eastern states, and some districts of Orissa, West Bengal and Jharkhand. The IMCP – II (2010 – 2015) funded by GFATM Round 9 has been initiated to provide intensive coverage with malaria control interventions in 7 North Eastern states.

There are many constraints for malaria control but there are ample opportunities too. Prevention with vector control interventions aims to reduce transmission and thus decrease the incidence and prevalence of infection and disease. Early and effective case management of malaria shortens disease duration and prevents complications and most deaths from malaria. In addition, interruption of transmission will also result.
2.1.6 Urban Malaria Scheme (UMS):

2.1.6.1 Objectives
  - To control urban malaria

2.1.6.2 Targets and Indicators
  - Under UMS, anti-larval operations are aimed at elimination of breeding of vectors which are monitored, therefore the target was elimination of breeding at its source and indicator was measurement of density of aquatic stages of vector mosquitoes and epidemiological impact.

2.1.6.3 Strategies
The following components for vector control strategy under Urban Malaria Scheme have been implemented:
  - Recurrent application of larvicides for polluted and non polluted water
  - Use of larvivorous fish, Gambusia affinis and Poecilia reticulata in ornamental tanks, ponds and other seasonal and permanent water bodies
  - Filling up of unused wells and water pools, disilting and deweeding of the margins of the drains and water channels
  - Use of legislative measures and prosecution of defaulters for creating mosquitogenic conditions in domestic places by implementation of civic bye-laws.
  - Indoor space Spray with 2% Pyrethrum extract diluted to 0.1% in and around 50 houses of positive cases
  - Use of fogging of insecticide in case of very high densities of Aedes aegypti and An.stephensi.

2.1.6.4 Current Disease Burden in urban areas:
  - The Urban Malaria Scheme (UMS) was launched in 1971 with the objective to control malaria by reducing the vector population in the urban areas through recurrent anti-larval measures, detection and complete treatment of malaria cases through the existing health services. Population migration to urban and peri-urban areas is increasing leading to unplanned urbanization, large scale urban conglomerations prone to vector borne diseases and mega construction activities with vertical growth of cities and led to increase in urban malaria from 7.79% (1996) to 13.8 % (2010). The following tables indicate the malaria situation in urban towns under Urban Malaria Scheme:

Table 1 Year wise malaria situation in Towns under UMS

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Total cases</th>
<th>P.f. cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>95814228</td>
<td>150917</td>
<td>19659</td>
<td>62</td>
</tr>
<tr>
<td>2005</td>
<td>102423064</td>
<td>135249</td>
<td>14905</td>
<td>96</td>
</tr>
<tr>
<td>2006</td>
<td>105782505</td>
<td>129531</td>
<td>17278</td>
<td>145</td>
</tr>
<tr>
<td>2007</td>
<td>112448027</td>
<td>102829</td>
<td>18038</td>
<td>125</td>
</tr>
<tr>
<td>2008</td>
<td>113334073</td>
<td>113810</td>
<td>18963</td>
<td>102</td>
</tr>
<tr>
<td>2009</td>
<td>114699850</td>
<td>166065</td>
<td>31134</td>
<td>213</td>
</tr>
<tr>
<td>2010</td>
<td>115999944</td>
<td>207165</td>
<td>32656</td>
<td>149</td>
</tr>
</tbody>
</table>
The epidemiological situation for the year 2010 revealed that the urban towns contribute 13.8% of total cases, 4.19% of *P. falciparum* cases and 19.42% deaths of the country.

Certain cities contribute large proportion of Malaria in the state like Chennai in Tamil Nadu and cities like Mumbai had shown an increase. The comparative picture of these town vs the state is indicated below.

In urban areas, large number of people avail Medicare services from the private sector. The reporting system from the private sector is practically nil. Therefore actual malaria disease burden may be much more than the reported cases. The hospitals in the cities/towns also provide referral services to malaria cases including the severe and complicated forms of malaria from the catchments areas of the cities/ towns. Therefore there is a need to strengthen the referral facilities and capacity of the hospitals for management of malaria cases.
2.1.6.5 Constraints:

- **Increasing urbanization:** The proportion of urban population to the total population has increased in the last few decades which is mainly by migration of population from rural to urban areas for earning and also attraction for availing both Medicare and education opportunities etc.

- **Unplanned Urbanization:** Haphazard and unplanned growth of towns has resulted in creation of “urban slum” with poor housing and sanitary conditions promoting vector mosquito breeding potential for malaria, filaria and dengue fever/Dengue haemorrhagic fever.

- **Supply of drinking water:** Deficient/restricted water supply has led to water storage practices in artificial containers which have generated breeding potential of *An.stephensi* vectors of urban malaria and *Aedes aegypti*, the vector of DF/DHF.

- **Development project with Health Impact Assessment (HIA):** Development project activities without health impact assessment have resulted in malaria outbreaks in short terms and endemic malaria with foci of *P.falciparum* resistance strains in long term. The out breaks of malaria and increase in malaria cases in Mumbai are examples of this kind.

- **Inadequate health infrastructure:** With rapid growth of population in urban towns, existing staff strength has not corresponding strengthening and is therefore inadequate for service delivery.

2.1.9.6 UMS Budget:

The allocation in approved Budget estimates during 11th Plan period is as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total B.E.</th>
<th>Allocation under UMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>399.50</td>
<td>20.90</td>
</tr>
<tr>
<td>2008-09</td>
<td>472.25</td>
<td>20.09</td>
</tr>
<tr>
<td>2009-10</td>
<td>442.00</td>
<td>20.90</td>
</tr>
<tr>
<td>2010-11</td>
<td>478.00</td>
<td>0.20</td>
</tr>
<tr>
<td>2011-12</td>
<td>520.00</td>
<td>-</td>
</tr>
</tbody>
</table>
2.2 Dengue and Chikungunya

2.2.1 Objectives

- To prevent mortality due to dengue/DHF.
- To reduce morbidity due to dengue and Chikungunya.

2.2.2 Target

- To reduce morbidity Dengue & mortality due to DHF/DSS
- To reduce morbidity due to Chikungunya.

2.2.3 Indicators

- Case fatality rate associated with dengue/DHF.
- Frequency of outbreaks

2.2.4 Strategies for Dengue and Chikungunya control

Dengue and Chikungunya are two different viral diseases transmitted by same vector Aedes mosquito. Therefore, the strategies are also same for prevention and control of both the diseases, which were three-pronged strategies as under:

- Early Case reporting and management:
  - Establishment of Sentinel Surveillance sites with laboratory support
  - Case management
  - Strengthening of referral services
  - Epidemic preparedness and rapid response

- Integrated vector management for transmission risk reduction:
  - Entomological Surveillance including larval surveys
  - Anti-larval measures
    - Source reduction
    - Chemical larvicide / biocide
    - Larvivorous fish
    - Environmental management
  - Anti-adult measures
    - Indoor Space Spraying with Pyrethrum extract (2%)
    - Fogging during outbreaks
  - Personal protection measures
    - Protective clothing
    - Insecticide treated bed nets and repellents

- Supporting Interventions:
  - Behaviour Change Communication
  - Inter-sectoral convergence
  - Human Resource Development through capacity building
  - Operational research
  - Supervision and Monitoring
### 2.2.5 Initiatives

Prepared a Long Term Action Plan for Prevention and Control of Chikungunya and dengue in the country and disseminated to the states in January 2007 for adoption. The main components of the Long Term Action Plan are as under:

- **Early case detection and reporting:**
  - Sentinel Surveillance Hospitals (SSHs) were identified in endemic states for carrying out proactive surveillance during the inter-epidemic period and to augment diagnostic facilities in endemic States. For this purpose in 2007 to begin with 110 Sentinel Surveillance Hospitals have been identified in consultation with the State Governments. Subsequently the Nos had been increased to 137 in 2008, to 171 in 2009, to 182 in 2010 and to 311 in 2011.
  - Each SSH has necessary equipment (ELISA reader & washer) for conducting serological tests. Wherever, equipment was not available with any SSH, the State Programme Officer had been requested to make the facility available by utilizing NRHM funds in consultation with the Dte of NVBDCP.
  - Total 13 Apex Referral Laboratories (ARLs) have been identified across the country with advanced diagnostic facility in 2007 for capacity building and backup support to the Sentinel Surveillance Hospitals and one more added in 2011 totaling to 14.
  - A sum of Rs 25.0 Lakhs (Rupees Twenty five lakhs only) as one time grant had been provided to ARLs to strengthen as one time grant to the participating institutions wherever necessary. Recurring grant of Rs 1.0 lakh per year to meet the contingency expenditure has also been provided.
  - To make the Sentinel Surveillance Hospitals functional Rs 0.50 lakh provided per year to each to meet the contingency expenditure.
  - National Institute of Virology (NIV), Pune has been entrusted for supply of dengue and chikungunya IgM MAC ELISA test kits to all SSHs and ARLs as per technical requirements of the states under the guidance of Dte of NVBDCP. The cost of these kits is being reimbursed by Govt of India. Kit production capacity of NIV Pune also up-scaled.
  - Newer diagnostic tool ELISA based dengue NS1 test introduced in the programme in 2010.
  - For early capture of any incipient outbreak through health workers and grassroots level functionaries such as ASHA, Anganwadi worker and Fever Treatment Depots guidelines on fever alert surveillance have been prepared and circulated to the states on Feb 2007.

- **Epidemic preparedness and rapid response:**
  - Endemic states were advised to prepare a contingency plan dealing with emergency hospitalization for most effective use of hospital and treatment
facilities in case of dengue or chikungunya outbreak occurs based on the previous year’s epidemiological data.

- As soon as a suspected case is reported, the district vector borne Disease Control Officer/ District Chief Medical Officer or Municipal Health Officer is being intimated by telephone, fax or e-mail so that he/she can immediately initiate remedial measures in the affected area(s) in order to effectively interrupt the transmission in incipient stage before it spreads further.

➢ **Case management**:

- National guidelines for clinical management of Dengue Fever, Dengue Haemorrhagic Fever, and Dengue Shock Syndrome have been sent to the State(s) in March 2007 for circulation in all hospitals.

- States were suggested to ensure availability of certain minimum of diagnostic materials and therapeutics in the hospitals for outpatient department as well as for indoor patient’s management.

➢ **Integrated Vector Management for transmission risk reduction**:

- *Aedes aegypti* mosquito, the vector of Dengue/Chikungunya breeds in man made containers in and around the houses, community based vector control has been envisaged.

- A targeted source reduction programme undertaken that emphasizes removing those larval habitats that are most productive (tyre dumps, scraps, water storage tanks, cisterns, air coolers, solid waste, coconut shells, etc) and treating those that cannot be removed with Temephos.

- Periodic household spray with Pyrethrum 2% extract (0.2% ready to spray solution with kerosene oil) where the case was detected. In addition, Ultra Low Volume (ULV) spraying of the entire ward/village, may be carried out in case of clustering of cases involving a large area.

➢ **Behaviour Change Communication**:

- As most transmission occurs at home, therefore, ultimate success of the programme depends on community participation and co-operation. For awareness of the community, Government of India advocates inter-sectoral convergence and communication for behavioural impact for involvement of the non-health sector stakeholders and the community for implementing appropriate prevention and control interventions.

- A comprehensive communication plan with media mix has been developed and activities are being initiated for dissemination of message through television, radio and print media and inter-personal forum with intensification during the transmission season.
• Month of July has been declared as anti-dengue month all over the country. Messages on Chikungunya have also added up in the campaign.

➢ **Capacity Building:**

• Training of National Trainers on Dengue/Chikungunya treatment has been carried out every year in All India Institute of Medical Sciences, New Delhi, who in turn imparted trainings at state level.
• For capacity building of state/district level health functionaries’ trainings were imparted on rapid response at NICD, Delhi.
• One laboratory team (one Microbiologist and one Technician) from the Sentinel Surveillance Hospitals has been trained in the Apex Referral Laboratories on diagnosis.

➢ **Inter-sectoral collaboration:**

• For Inter-ministerial convergence for prevention and control of dengue and chikungunya involving the Ministries of Urban development, rural development, Panchayati Raj efforts have been made and circulars have been sent to the concerned departments in the States requesting to take necessary measures to control the spread of vector borne diseases including Chikungunya.
• The Village Health and Sanitation Committee (VHSC) under NRHM have been requested to carrying out weekly cleanliness drive in the respective villages by making use of the flexi-pool.

➢ **Logistic support:**

• In addition to the supply of logistics, Govt. of India had released emergency package to the affected states to the tune of Rs. 2.21 Crores in 2006-07, subsequently Rs. 1.78 Crores in 2007-08 to sustain the activities for prevention and control of Chikungunya outbreak.

➢ **Monitoring and evaluation:**

• Periodic reviews carried out to determine the progress of work and actual inputs received by the programme.
• Situations in the States are being monitored regularly through reports and feedbacks are provided as and when required. Field visits are made for situational analyses of the programme implementation in the states and for technical guidance.

➢ **Achievement**

• States are implementing strategies of Long Term Action Plan for Prevention and Control of Dengue and Chikungunya since 2007.
• Established 311 Sentinel Surveillance Hospitals with laboratory support for augmentation of diagnostic facility for Dengue in endemic State(s) and linked with 14 Apex Referral Laboratories with advanced diagnostic facilities for back up support.

• To ensure the quality of diagnostics IgM test kits to these institutes had been supplied by National Institute of Virology, Pune since 2007.

• Following national guidelines for clinical management of Dengue cases has been improved and dengue case fatality rate reduced by 69.2% in 2010 as compared to 2006.

• Better and improved case detection, dengue cases increased by 129.7% in 2010 (28292) as compared to 2006 (12317) but Chikungunya cases decreased from 13,90,322 in 2006 to 48,176 in 2010.

• Early diagnosis through ELISA based dengue NS1 test which can detect a case from 1st day onwards of onset of the disease in addition to IgM MAC ELISA which can detect a case after 5th day of onset of the disease.

• Monitoring through the daily reports received during transmission period and weekly in low/no transmission period from State Health Authorities and reviewing the preparedness of the State Governments for prevention and control of Dengue and Chikungunya.

• Committee of Secretaries under the Chairmanship of Cabinet Secretary reviewed the Dengue & Chikungunya situation and programme strategies on 24th August, 9th September, 12th November in 2011 and 26th May 2011.

• Effective IEC campaign to make programme interventions at grassroots’ level and initiate community empowerment and mobilization.

• Trainings of various health functionaries are being conducted by states/districts by involving regional offices.

2.2.6 Disease burden and trend

2.2.6.1 Dengue

• Dengue Fever is an outbreak prone viral disease and is the fastest-growing arborvirus infection with a rapidly evolving epidemiology. It is listed among the 40 emerging diseases of global importance. Dengue has been identified as one of the 17 neglected tropical disease by WHO (First WHO report on neglected tropical diseases: working to overcome the global impact of neglected tropical diseases. 2010).

• In India, in recent years the occurrence of dengue fever was reported during 1956 from Vellore district in Tamil Nadu, since than out of 35 States/Union Territories in the country 31 have Dengue cases during last two decades from 1991 to 2010. Recurring outbreaks of DF/DHF have been reported from
Andhra Pradesh, Delhi, Goa, Haryana, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Uttar Pradesh, Pondicherry, Punjab, Tamil Nadu and West Bengal. In 2006, the country witnessed an outbreak of DF/DHF with 12,317 cases and 184 deaths reported from 18 States/UTs (270 districts). In 2010 total 28292 cases and 110 deaths from 27 States/UTs (403 districts) which is highest in the country in last two decades. A state wise situation from 2006 to 2010 is given at Table-1.

- The case fatality rate (deaths per 100 cases) due to dengue was 1.5% in 2006 has declined to 0.4% in 2010 after the National Guidelines on clinical management of DF/DHF/DSS were developed and circulated in 2007.
- All the four virus serotypes DENV 1-4 have been isolated in India. *Aedes aegypti* is the most efficient vector of dengue in India. *Ae. albopictus* is also involved as secondary vector in some parts of the country.
- The risk of dengue has shown an increase in the recent years due to rapid urbanization, life style changes and improper water storage practices in urban, peri-urban and rural areas, leading to proliferation of mosquito breeding sites. Due to the manmade environmental and lifestyle changes DF/DHF has now spread to rural areas as well. Dengue is an ecological disease and the transmission is related to rainfall and temperature. Every year during the period of July-Nov there is an upsurge in the cases of Dengue/DHF. However, in the peninsular states and western parts of the Country the disease has become perennial.
- Based on the dengue transmission potential at macro and micro levels, WHO has categorized the Countries in SEARO. Till 2009, India was in Category B, grouped with Bangladesh and Maldives where cyclical epidemics are becoming more frequent, multiple virus serotypes circulating and expanding geographically within countries. However, in view of increasing endemicity, WHO in 2010 grouped India in Category A Countries with Indonesia, Myanmar, Sri Lanka, Thailand and Timor-Leste where Dengue is a major public health problem, leading cause of hospitalization and death among children, hyperendemicity in urban centres, spreading to rural areas and multiple virus serotypes circulating (Comprehensive Guidelines for Prevention and Control of DHF – Draft 2010 (in press), WHO SEARO).

### 2.2.6.2 Chikungunya

- In India a major epidemic of Chikungunya fever was reported during the last millennium viz.; 1963 (Kolkata), 1965 (Pondicherry and Chennai in Tamil Nadu, Rajahmundry, Vishakapatnam and Kakinada in Andhra Pradesh; Sagar in Madhya Pradesh; and Nagpur in Maharashtra) and 1973, (Barsi in Maharashtra). Thereafter, sporadic cases also continued to be recorded especially in Maharashtra state during 1983 and 2000. After quiescence of
Chikungunya cases start appearing in post monsoon period that is May onwards with a peak between the month July, August and September and decline thereafter, as during this period vector density is very high. *Aedes aegypti* played the major role in transmitting the disease in all the states except Kerala, where *Ae. albopictus* played the major role. In northern part of the country the most favoured breeding habitats of *Ae. aegypti* were desert coolers, over head tanks, water storage vessels, animal water troughs, flower pots and discarded junks like discarded tyres, disposable food containers etc. In southern India over head tanks, water storage vessels, coconut shells, refrigerator tray, flower pots and discarded junks materials was most favoured. While *Ae. albopictus* breeding was detected in latex collecting cups of rubber plantations, fruit shells, leaf axils, tree holes etc. The areas reporting Chikungunya was mostly overlapping with Dengue affected areas are as under:

### Dengue affected areas

![Dengue affected areas](image)

### Chikungunya affected areas

![Chikungunya affected areas](image)

#### 2.2.7 M & E system including status of MIS, Disease surveillance, its quality & utilization

- Functioning of all identified Sentinel Surveillance Hospitals
- Data on number of cases and deaths not received timely from all the States.
➢ Private sectors not reporting the number of cases and deaths
➢ Proper monitoring & analysis of data at district/state level lacking
➢ Nil or poor entomological monitoring at the Municipality/district/state level
➢ State/district level rapid response teams for timely action on report of cases.
➢ Endemic states are regularly monitored through reports received daily during transmission period and weekly in remaining period from the states
➢ Monitoring situations in the periphery visiting the field by officers and staff from the Directorate of NVBDCP, Regional Offices.

2.2.8 Constraints

➢ Administrative
  • Dengue is not a Notifiable Disease in all the States.
  • Prevention and control of Dengue and Chikungunya is not in priority for urban local bodies and panchayats

➢ Technical
  • No drug available to cure or any vaccine available to prevent Dengue and Chikungunya infection.
  • Geographical spread of both Dengue and Chikungunya has shown an increase in the recent years due to various factors in urban, peri-urban and rural areas, leading to proliferation of mosquito breeding sites which are:
    • Demographic and societal changes: Demographic and societal changes leading to unplanned and uncontrolled urbanization and concurrent population growth has put severe constraints on civic amenities, particularly water supply and solid waste disposal, thereby increasing the breeding potential of the vector species.
    • Solid waste management: There have been significant increases in the use of Consumerism and introduction of non-biodegradable plastics, namely paper cups, used tyres, etc. compounded by nonexistent or insufficient waste collection and management which facilitate increased vector breeding.
    • Booming automobile industry leading to large-scale storage, import, export and dumping of used tires infested with *Ae. aegypti* larvae resulting passive spread of the disease to new areas (movement of incubating eggs).
    • Increased population movement (work, travel, tourism or pilgrimage) has resulted in a constant exchange of viruses (dengue serotypes and CHK virus)
    • Significant increase in plantations: Increased demand of rubber and being a profit making cash crop banana, pineapple, coconut, arecanut etc are increasing and simultaneously favourite breeding habitats of *Ae albopictus* also increasing in plantations.
➢ **Operational**

- Operationalizing all identified Sentinel Surveillance Hospitals with, equipment, tests kits and trained manpower
- Timely sending the line lists to the district VBD officer and/or municipality health officer for implementation of effective vector control measures to interrupt the transmission before spreading further
- Quite a large number of patients receive treatment through private sector which goes unreported or under-reported.
- A good vector surveillance and control is the mainstay for reducing incidence of Dengue and Chikungunya.
- Sustaining social mobilization for Behaviour Change Communication and community involvement in source reduction activities.
- Absence of civic byelaws or building byelaws to prevent mosquitogenic conditions in all municipal and corporation areas. Though a few urban areas have adopted legislation for the prevention of "nuisance mosquitoes", however, lack in implementation at the ground level.

➢ **Financial**

- Non-receipt of adequate funds on time by the Districts due to non-release by states due to administrative delays.
- Non availability of funds in Municipality/ local bodies for source reduction activities adversely affecting the programme.
- Inadequate budget for Dengue and Chikungunya control programme. Only 3.3% of the total NVBDCP budget dedicated for Dengue and Chikungunya. However, during XI plan due to financial constraints only 40% was made available for programme activities.

### 2.2.9 Mid Course Correction

- The intensity of dengue transmission has shown substantial increase over the years, therefore a need has arisen to revisit the current strategies of Long Term Action Plan and develop a programmatic and comprehensive Mid Term Plan.

- The conceptual framework of Mid Term Plan which has been approved by Committee of Secretaries in a meeting held under the Chairmanship of Cabinet Secretary on 26th May 2011 is a comprehensive and integrated approach that places equal weight, including fiscal and human resources, on all elements of the programme for prevention and control of Dengue and Chikungunya in the country.

### 2.2.10 Outlays & Expenditure

- Until Xth plan no specific funds were provided for Dengue control and the assistance was provided out of National Anti Malaria Programme provision on as and when required basis. After the re-emergence of Chikungunya in 2006, it was included under the umbrella of NVBDCP as the 6th VBD in May 2007, following which in XIth plan for both dengue and chikungunya dedicated funds has been approved for the first time. Since then Govt. of India provides cash assistance (Grant-in-Aid) to the endemic states for strengthening surveillance, epidemic
preparedness, cost of monitoring & evaluation, capacity building and IEC. Cost of the IgM test kits are released to NIV, Pune. Insecticides are provided under urban malaria scheme. The allocation in approved Budget estimates during 11th Plan period is as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total B.E.</th>
<th>Allocation for Dengue &amp; Chikungunya</th>
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</thead>
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<tr>
<td>2007-08</td>
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<tr>
<td>2008-09</td>
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<td>2011-12</td>
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* includes Rs 1.78 Crores emergency package released to Chikungunya effected states
### Table-1 STATE-WISE DENGUE CASES (C) AND DEATHS (D) IN THE COUNTRY

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</table>
2.3 Japanese Encephalitis (JE)

After approving an Umbrella Programme under National Vector Borne Disease Control Programme for control of Vector borne Disease including Malaria, Kala-azar, Filariasis, Japanese Encephalitis and Dengue/Dengue Hemorrhagic Fever (DF/DHF) since December 2003. Directorate of National Vector Borne disease Control Programme is the nodal agency for Government of India responsible for the Control Programme of these diseases including JE.

2.3.1 Objectives during XI five year plan

- To reduce morbidity and Case Fatality Rate
- To reduce frequency of outbreaks

2.3.2 Targets for XI Plan, indicators and mean of verification

- Reduction in mortality by 50% by the year 2010 (as per National Health Policy Goal - 2002)
- 50% Reduction in morbidity
- Reduction in frequency of outbreaks
- Facilitation of Institutional Strengthening for diagnostic facilities in all 133 JE endemic districts.
- Vaccination in JE endemic districts

2.3.3 Strategies during XI five year plan for prevention and control of JE include:

2.3.3.1 Early Diagnosis and Prompt treatment of JE cases

- Proper case management: Strengthening of referral services: Referral support must be available at district level.
- Management of Sequelae: Sequelae management by drugs, orthopedic and rehabilitation procedures in all District/Medical College Hospitals/specialist Hospitals in JE endemic areas.
- Epidemic preparedness and rapid response: A rapid response team should be constituted in all JE endemic districts to monitor the JE situation and outbreak in vulnerable areas.

2.3.3.2 Integrated vector control method: Vector Control is limited in JE due to outdoor resting habits of the vector. Vector control by fogging with technical Malathion/Pyrethrum for immediate killing of infected mosquitoes is recommended during an outbreak.

2.3.3.3 Capacity building: Capacity building & manpower development through training for Clinicians/Nurses in JE case management in all JE endemic districts and for Laboratory Technicians and Laboratory In-charge/microbiologist in diagnosis of JE cases by MAC ELISA method in all sentinel laboratories in a phased manner.

2.3.3.4 Behaviour Change Communication: For promoting early case reporting and early referral of patients, increasing awareness of clinical
signs, Personal protection including segregation/improved habitation of pigs away from human population/mosquito proofing of pigsties etc.

2.3.3.5 Supervision and monitoring: Supervision and monitoring through periodic reviews/reports and field visits for proper monitoring for Japanese Encephalitis.

2.3.3.6 Vaccination: JE vaccination programme has been made an integral component of Universal Immunization Programme (UIP) of MOH & FW, Govt. of India in a phased manner using single dose live attenuated SA-14-14-2 vaccine. Children between 1 and 15 years of age are presently covered. Till 25.5.2011, 111 districts were covered under vaccination campaign.

JE Vaccination Coverage 2006 - 2010

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Year</th>
<th>Number of District</th>
<th>Targeted Children</th>
<th>Total Vaccination</th>
<th>% Coverage</th>
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<td>86.18</td>
</tr>
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</table>

2.3.4 Current Status and Achievements

Japanese Encephalitis (JE) is caused by a virus and is transmitted through mosquitoes. The main reservoirs of the JE virus are pigs and water birds and in its natural cycle, virus is maintained in these animals. Man is an accidental host and does not play role in JE transmission. Children below 15 years are mostly affected. JE is an outbreak prone viral infection having cyclic trend with seasonal phenomenon. Outbreaks of JE usually coincide with the monsoons and post monsoon period when the density of mosquitoes increases. The Case Fatality Rate (CFR) ranges from 20% to 52%.

New states that reported cases during 2010

* Currently the disease is being reported from the states of Andhra Pradesh, Assam, Bihar, Goa, Haryana, Karnataka, Kerala, Maharashtra, Manipur, Nagaland Tamil Nadu, Uttrakhand, Uttar Pradesh and West Bengal
From the graph below it is clear that the strategies to control JE deaths in endemic areas which are affected since 1978 have been useful in reducing the incidence with available preventive and control measures, however, being an outbreak prone disease it is not possible to bring any dramatic change in disease trend and cycles. There has been remarkable reduction in the incidence of JE positive cases in the endemic districts but the incidence of non-JE AES cases has marginally increased due to circulation of non-JE viruses.

The input provided during XI year plan has led to significant decrease in the mortality of JE cases in recent past because of better case management in the endemic states and functioning of sentinel sites. CFR which was reported to be around 25% during 2005 has now been brought down to approximately 12% during 2010.
The incidence of JE in the country during the last five years (during XI five year plan) as per the reports received from the states/UTs is given below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Deaths</th>
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<td>1684</td>
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<tr>
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<td>995</td>
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<tr>
<td>2008</td>
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<tr>
<td>2010</td>
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</table>

During the year 2009 altogether 4482 cases and 774 deaths due to AES/JE were reported from 12 states in the country. During 2010, 5149 AES/JE cases and 677 deaths have been reported from 15 states in the country. During 2011, till 19.5.2011, 522 AES/JE cases and 61 deaths have been reported from Andhra Pradesh, Goa, Karnataka and Uttar Pradesh. During 2010 cases were also reported from 7 new districts from the states of Arunachal Pradesh, Meghalaya and Uttarakhand.

Trend of Acute Encephalitis Syndrome/Japanese Encephalitis since 2005

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<th>2008</th>
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2.3.5 Monitoring & Evaluation system including status of MIS, disease surveillance, its quality and utilization

- Monitoring was done through periodic reviews and monthly/weekly/daily reports and field visits etc. Web based MIS has been developed for proper monitoring of Japanese Encephalitis.
• Strengthening of JE surveillance as per the national guidelines that have been issued by NVBDCP. Surveillance of AES has been adopted during IX plan period.
• Overall evaluation of impact of vaccination by an independent agency.

2.3.6 Constraints during XI plan

• During recent past the incidence rate of Japanese Encephalitis (JE) cases was reduced remarkably throughout the country but the number of AES cases have increased because of circulation of non-JE viruses (entero viruses) in the rural endemic district.
• Poor coverage of Routine Immunisation in endemic districts.
• Lack of Rehabilitation facility due to unavailability of sufficient rehabilitation centres in the endemic districts.
• Lack of priority to Japanese Encephalitis among states as a result of new states reported cases of AES/JE. There are gaps in surveillance case management and BCC/IEC measures.
• Inspite of providing ample resources to the endemic states, poor surveillance still persist.
• Lack of coordination between surveillance and laboratory personnel.
• Research and development in vector borne diseases particularly on Japanese Encephalitis has been lacking. There are major gaps in the present knowledge and available technology. Concerted efforts are required to be made for an effective Research and Development programme. Some of the critical areas related to JE prevention and control requiring operational research include:
  • Improved vector control interventions
  • Development of early warning signals for prediction of JE outbreaks
  • Vector Bionomics
  • Study on vaccine efficacy
  • Mosquito control in pig sties

2.3.7 Initiative and Mid course correction

• GOI has established Vector Borne Disease Surveillance Unit (VBDSU) which is headed by Professor & Head of Department (SPM), BRD Medical College, Gorakhpur. This unit coordinates with the state on technical issues related to eco-epidemiology, prevention and control.
• In addition to this, major initiative has been taken by GOI by establishing 50 bedded JE endemic ward in BRD Medical College for better case management.
• Close surveillance of AES/JE cases by the DGHS & Addl. DGHS in the endemic states.
• Capacity building and manpower development through training of clinicians & nurses for better case management of JE in endemic districts and for laboratory technicians and laboratory in-charge and diagnosis of JE cases.
• Better diagnostic and laboratory facilities have been established by making functional most of the sentinel sites.
• Field unit of NIV Pune has been established for detection and isolation of non-JE viruses.
• JE Sub-office of ROH&FW has been set up for closely monitoring disease trends and coordinating with the state for effective control measures.

2.3.8 Outlays during XI five year Plan

During XI five year plan an amount of `1268.5 Lakhs was allocated for prevention and control of AES/JE in the country. In addition to above allocation ` 8.64 crores was made out of NRHM additionality for strengthening case management at BRD Medical College, Gorakhpur, Uttar Pradesh and for intensifying surveillance across 16 identified sentinel sites in the state. With above allocation following programme components were strengthened.

1. Diagnostic and case management
2. Disease and vector surveillance
3. Vector control
4. BCC/IEC
5. Capacity building

2.3.9 Budget in XI five year plan

Details of State-wise funds allocation under NVBDCP for prevention and control of JE during 2007-08 to 2011-12

<table>
<thead>
<tr>
<th>Year</th>
<th>Total B.E.</th>
<th>Allocation for ELF</th>
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<tr>
<td>2011-12</td>
<td>520.00</td>
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</table>
2.4 LYMPHATIC FILARIASIS

2.4.1 Objectives:

Elimination of Lymphatic filariasis in the country by the year 2015 by:

- Progressively reducing and ultimately interrupting the transmission of Lymphatic filariasis (LF).
- Preventing and reducing disability amongst affected persons through disability alleviation and morbidity management.

2.4.2 Targets

The targets during XI Plan document were as under:

- To cover all the eligible population living in LF endemic districts during Mass Drug Administration (MDA).
- To line list the Lymphoedema and Hydrocele cases and augment home based morbidity management for Lymphoedema and hydrocele operations for the hydrocele cases.

2.4.3 Strategies: The strategies for elimination of lymphatic filariasis adopted were as under:

- Annual Mass Drug Administration (MDA) of single dose of DEC (Diethylcarbamazine citrate) for 5 years or more to the eligible population (except pregnant women, children below 2 years of age and seriously ill persons) to interrupt transmission of the disease. Co-administration of DEC+Albendazole was upscaled since 2007 after approval of National Task Force on Lymphatic Filariasis.
- Home based management of lymphoedema cases and up-scaling of hydrocele operations in identified CHCs/ Distt hospitals /medical colleges.
- Capacity building for home-based management of cases with Lymphoedema.

2.4.4 Initiatives

Various initiatives were taken to achieve the target of covering all the eligible population in LF endemic districts during MDA which was launched in the year 2004 at national level. The major initiatives taken are as below:

- Dissemination of technical guidelines for ELF.
- Conducting various sensitization workshops at national, regional, state, district and PHC levels.
- Capacity building for district & PHC level medical officers as well as for para medical staff.
- Massive IEC & social mobilization for improving the drug coverage during MDA.
- Involvement of Medical Colleges/ Research Institutions for conducting independent assessment to provide a feedback on actual drug compliance for its improvement.
- Release of cash grant to the State for all the preparatory activities and incentives to drug distributors including ASHAs.
- The strip packing of DEC was introduced in the programme. The acceptance and compliance of drug has been improved with strip packing of DEC. Co-administration of DEC with Albendazole was also introduced for MDA.
2.4.5 Status and achievement

- Lymphatic Filariasis (LF) is a seriously debilitating and incapacitating disease. During the early phase of infection, the infected person remains apparently healthy but serves as a source of infection for transmission. This stage may continue for 5-7 years and can be treated with microfilaricidal drug (DEC) and or DEC+Albendazole, when detected. The transmission of filariasis is through mosquitoes namely *Culex quinquefasciatus*. Subsequently, the infected person may develop swellings of limbs and genitals which keep on increasing and making the person incapacitated and suffering from social stigma. The person also suffers from frequent attacks of lymphangitis, high fever, swelling and pain. There is no cure for this stage and person is forced to live with huge swellings exposed to secondary infections. Control of lymphatic filariasis is immensely important because of personal trauma to the affected persons and associated with social stigma, even though it is not fatal. International Task Force for Disease Eradication identified lymphatic filariasis as one of the six infectious diseases to be “eradicable” or “potentially eradicable”. The World Health Assembly in 1997 adopted resolution, WHA 50.29, for Elimination of Lymphatic Filariasis (ELF) as a global public health problem by 2020. National Health Policy (2002) of the country envisaged the goal of Elimination of Lymphatic Filariasis by the year 2015 in India.

- In pursuit to achieve the goal set by NHP (2002), the GoI launched nationwide annual Mass Drug Administration (MDA) with Diethylcarbamazine citrate (DEC) tablets in single recommended dosage for the population living at the risk of filariasis. The districts were selected as *implementation unit* based on historical evidence of filaria endemicity, presence of lymphoedema and hydrocele cases and also the presence of microfilaria carriers. The microfilaria rate reported from the States revealed an overall average of 1.24% at national level based on data of the endemic states, which was taken as baseline. The objective of Annual Mass Drug Administration was to bring down microfilaria rate in the community to less than 1% because the Elimination of Lymphatic Filariasis is defined by WHO as “Lymphatic Filariasis ceases to be a public health problem, when the number of microfilaria carriers is less than 1% and the children born after initiation of elimination activities are free from circulating antigenaemia (presence of adult filaria worm in human body)”. There are about 250 Lymphatic Filariasis endemic districts with approximately 600 million population at risk of LF in the country. The Mass Drug Administration was launched in 2004 covering 202 districts with coverage rage of 73% and was upscaled to all the 250 LF endemic districts in 2007. The coverage percentage reported in subsequent years was 76% in 2005, 81% in 2006, 83% in 2007, 86% in 2008, 86.7% in 2009 and about 87% in 2010.

- The strategy of MDA with DEC alone was changed the co-administration of DEC + Albendazole since 2007. The co-administration was also upscaled and in 2007 two states (20 districts of Tamil Nadu & 11 districts of Kerela were covered); in 4 States (20 districts of Tamil Nadu & 11 districts of Kerala, 8 districts of Karnataka and 16 districts of Andhra Pradesh) were covered.
whereas since 2009, it is being implemented in all the LF endemic States of the country. The state wise data is indicated at Annexure-1.

- **Microfilaria survey:** The microfilaria survey in all the implementation units (districts) is being done through night blood survey before MDA. The survey is done in 4 sentinel and 4 random sites as per the guidelines. **The analysis of overall reports reveals that during 2004 (baseline), the microfilaria rate was 1.24% which has been brought down to 0.65% in 2009 and 0.34% in 2010 respectively.** The data of 2009 and 2010 revealed that out of 250 filaria endemic districts, 152 districts are with Mf rate less than 1%. The state wise data is indicated at Annexure-2.

**MDA Coverage vs Microfilaria Rate**

- **Social Mobilization:** Intensive social mobilization towards LF elimination was carried out by various states/ UTs involving political/ opinion leaders, decision makers, local leaders and community. The intensified IEC campaigns have improved actual drug compliance which is revealed by reduction in gap between drug distribution coverage and actual drug compliance through independent assessment reports.

- **Monitoring and Evaluation:** For monitoring and evaluation of actual drug compliance, the medical college faculties/ Research Institutions and Regional offices for Health & FW have been involved. Directorate of NVBDCP has provided funds every year. The independent surveys have been done using pretested questionnaire formats after MDA in many districts.

- **Morbidity Management:** Line listing of Lymphoedema and Hydrocele cases were initiated since 2004 by door to door survey in the LF endemic districts. The cases are updated every year and till 2010, 8 lakh lymphodema and 4 lakh hydrocele cases have been line listed from LF endemic districts. As per reports received from states, 72464 hydrocele cases have been operated. The state wise data is indicated at Annexure-3.

2.4.6

**Constraints:**

- Though the programme has been able to enhance drug delivery to more than 500 million people, the actual drug consumption has been the major issue. The
supervised drug administration for better compliance is challenged by large population to be covered @ 250 persons per day per worker and moreover urban population mostly is not convinced.

- Involvement of local leaders and volunteers for MDA as well as for quality IEC/BCC activities in local languages in interpersonal communication.
- Conducting microfilaria survey in night time is very important and adherence of time of survey from 8 p.m. to 12 mid night is very crucial.
- Availability of experts on Lymphatic filariasis to match the programme requirement for training and monitoring etc.

2.4.7 Mid Course correction

- DEC tablets were procured and supplied in strip packing to improve the acceptance of drug by the community.
- Global strategy of co-administration of DEC with Albendazole was introduced in the programme as per the recommendation of National Task Force under the Chairmanship of DGHS.
- ASHAs were involved as volunteers during mass drug administration which has improved the confidence among people to accept the drug.
- Intensification of lymphoedema management and Hydrocelectomy has increased the visibility of the programme at local level.

2.4.8 Financial Assistance

- The allocation in approved Budget estimates during 11th Plan period is as under:

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<th>Allocation for ELF</th>
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## Population Coverage (%) during Mass Drug Administration (MDA)

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**ND:** MDA Not Done  
**YD:** Yet to Do
### Microfilaria rate (%) in the states

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<th>Sl. No.</th>
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<td>0.19</td>
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<td>0.88</td>
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<td>0.01</td>
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ND: Mf survey not undertaken
NR: Not reported
Annexure-III

Updated Line Listing of Lymphoedema and Hydrocele Cases
(Figures in subsequent years includes previous year's data)
(Hydrocele cases are reduced due to operations)

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</tbody>
</table>

L- Lymphoedema
H - Hydrocele
2.5 KALA-AZAR

2.5.1 Objectives
- Elimination of Kala-azar by 2015

2.5.2 Target and Indicators
- The target is to bring down kala-azar incidence to less than one case per 10,000 population at sub-district level (block level).

The Indicators are
- Reduction in the annual incidence and mortality due to kala-azar
- Full treatment Compliance rate to the confirmed cases.
- Good quality and coverage of Indoor residual spray (IRS) with DDT for vector control

2.5.3 Strategy
- Interruption of transmission through vector control by undertaking two rounds of DDT spraying annually in villages reporting kala-azar incidence. In addition, promotion of environmental and personal protection measures.
- Case detection and treatment through the existing primary health care system supplemented with periodic annual active searches (Kala-azar Fortnight) for case detection followed by free treatment of all Kala-azar cases. Treatment compliance to be ensured by a patient coding system, whereby all patients being treated in government institutions or non-government sector, can be tracked to village level.
- Health education for social mobilization through all probable approaches including NGOs, voluntary and private agencies to ensure community awareness of the disease prevention, treatment and availability of free diagnostic and treatment facilities. Social mobilization is an integral part of the programme.
- Capacity building at all echelons of programme implementation. All the personnel involved in programme implementation, various stakeholders, partners and community, the ultimate beneficiaries, shall be provided with appropriate support for awareness, skills and specific roles to be performed to achieve the expected outcomes. Both institutional and individual capacity building would be part of the strategy.
- Monitoring, Supervision and Evaluation within all programme implementation levels as well as through Kala-azar coordinators to be posted at district, state and national levels.

2.5.4 Initiatives and Achievements
- Incentives: Several Incentives have been introduced to improve upon the case reporting and treatment of the confirmed cases. A confirmed case of kala-azar is being paid Rs. 50/- per day towards loss of wages during the period of treatment. There is a provision of free diet for the patient and one attendant.
- ASHA is being actively involved at the grassroot level for detection of suspected cases of kala-azar and for ensuring complete treatment. There is
provision for Rs. 50/- to refer a suspected case of kala-azar to the nearest PHC and Rs. 150/- for ensuring treatment after its confirmation.

- **Case Search and Effective Treatment**: Currently, a lot of effort is going into active search of cases through campaigns i.e. camp approach instead of house to house visits. Simpler diagnostic procedure and availability of oral drug are likely to substantially improve case detection output, as more and more cases will get diagnosed, and come forward for simpler treatment.

- **Programme Management**: The kala-azar elimination programme management is being strengthened with placement of Consultants, VBD Consultants and KTS at the national and state levels, for more intensive monitoring of the programme activities.

- **BCC and Environmental Plans**: Two independent agencies have been hired for Behavioural Change Communication for community involvement and Environmental Management Planing to address the issues related with safe handling of insecticides to promote community involvement in the programme activities.

### 2.5.5 Kala Azar situation in the Country

- Kala-azar incidence is being recorded in 31 districts of Bihar, 11 districts of West Bengal, 4 each in UP and Jharkhand. An estimated 130 million population is living at risk of kala-azar. The annual incidence of disease in the three states reveals an increase initially (1990-92) followed by decline (1993-95). There has been an overall decline of 75% in kala-azar cases in 2005 as compared to 1990, the year of commencement of kala-azar control programme. The state of Bihar contributes 70-80% of the total disease burden in the country. In the endemic state, the disease affects the poor and marginalized people.

**ACHIEVEMENTS –TRENDS OF KALA-AZAR IN INDIA**
2.5.6 M & E system including status of MIS, Disease surveillance, its quality & utilization

- Data on number of cases & deaths delayed and underreported.
- State/districts requested to provide age & gender-wise information up to sub-centre level.
- Proper monitoring & analysis of data at sub-centre/PHC/district level lacking.
- Poor monitoring & reporting of spray completion reports.
- Information on number of PKDL cases inadequate.
- All endemic districts have reliable data on incidence of kala-azar.
- Kala-azar endemic states are regularly monitored through monitoring visits by and officers staff from the Directorate of NVBDCP, R.D. office, Patna.

2.5.7 Constraints

2.5.7.1 Administrative
- Kala-azar is Notifiable Disease in Bihar. In other three affected states, similar step needs to be taken up.

2.5.7.2 Technical
- Active Case Search schedules not properly followed.
- Indiscriminate use of medicines and incomplete treatment by the private sector service providers.
- Drug unresponsiveness, particularly to first line drug Sodium Stibo Gluconate (SSG) has increased in some areas.
- Treatment protocols are not followed properly. Treatment cards recommended for use under the Programme often not used.
- Detection of PKDL and its treatment are not at the optimum level. No networking with dermatologists.
- Coverage and quality of IRS unsatisfactory.
- Complete treatment compliance is a problem as presently used drugs, injectables/parenteral infusion with long duration regimen.

2.5.7.3 Operational
- Political commitment exists but insufficient monitoring of control interventions and resource utilization; variable absorption capacity of states in relation to utilization of funds/commodities.
- Limited social mobilization. Behaviour Change Communication needs scaling up to increase the visibility and acceptability of Kala-azar Elimination programme.

2.5.7.4 Financial
- Non-receipt of funds by the Districts/PHCs due to non-release by states due to administrative delays.
- Non-submission of SOE & UCs by the States hampering release of funds by the GOI.

2.5.8 Mid Course Correction
- Active case search operations are being organized on a half yearly basis through the Kala-azar Fortnight in every endemic district.
- Field visits to the sprayed areas by teams from the Directorate NVBDCP/Coordinators, NICD, RMRI/ICMR to ensure adequate supervision, monitoring of IRS in the endemic villages.
To improve diagnosis of kala-azar at the peripheral level, rapid dipsticks coated with rK39 are being introduced into the programme. rK39, a rapid dipstick test, has been thoroughly investigated in India and elsewhere and is known to be highly sensitive and specific.

Miltefosine, a safe and effective oral drug is being introduced, as the first line of treatment in the programme on a pilot basis in 10 districts of Bihar, Jharkhand and West Bengal. 0.86 million 50 mg capsules of miltefosine are being procured for supply to these districts. This drug has been registered for use in India. Necessary guidelines have been circulated for its use to the states.

### 2.5.9 Outlays & Expenditure

Until 1989-90, no specific funds were provided for Kala-azar control and the assistance was provided out of National Anti Malaria Programme provision for insecticide. Planning Commission concurred enhanced Govt. of India assistance for Kala-azar control since 2001-02, so that Govt. of India could provide operational cost including spray wages to enable States to implement programme strategy effectively. Since December 2003, Govt. of India provides 100% assistance in cash and kind to four endemic states namely, Bihar, Jharkhand, Uttar Pradesh and West Bengal under Kala-azar Control Programme for insecticides and anti-Kala-azar medicines as well as resource based IEC, capacity building and case search activities and operational wages for spray workers. Govt. also meets freight charge for DDT transportation up to consignee level. Details of assistance provided since 2006-07 by the Govt. of India and expenditure incurred by the four affected states are as under:

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PART II – PROPOSED XII FIVE-YEAR PLAN

1. INTRODUCTION

The existing activities for prevention and control of malaria and other vector borne diseases, as in XI Plan would be continued in XII Plan period. In addition, there would be added emphasis on identified thrust areas. The initiatives and additional inputs presently being supported by externally aided projects will be continued and expanded through domestic budget support. This would result in moving towards pre-elimination stage of malaria, and control of Dengue, Chikungunya and JE. In addition, the elimination of Kala-azar and Lymphatic Filariasis by 2015 is being envisaged.

1.1 Vision for Vector Borne Disease Control

Vision:
A well informed and self sustained, healthy India, free from vector borne diseases with equitable access to quality health care

Mission:
Integrated and accelerated action towards reducing mortality on account of Malaria, Dengue and Japanese Encephalitis; reduction in morbidity due to Malaria, Dengue, Chikungunya and Japanese Encephalitis and elimination of Kala-azar & Lymphatic filariasis.

Priority for 12th plan period

In pursuit of achieving the above mentioned vision and mission, the programme priorities during 12th plan period would be:

1. Elimination of two diseases namely Kala-azar and Lymphatic filariasis by 2015.
2. Control and contain the outbreaks of Dengue, Chikungunya and Japanese Encephalitis.
3. Paving the way for pre-elimination phase of malaria.

Directorate NVBDCP deals with six vector borne diseases namely, Malaria, Lymphatic Filariasis, Kala-Azar, Dengue/Chikungunya and Japanese Encephalitis. Out of these six diseases Kala-azar and Lymphatic Filariasis are targeted for
elimination by 2015. Malaria, Dengue/Chikungunya and Japanese Encephalitis are outbreak prone diseases. The control and containment of these diseases require intense efforts and resources. For initiation of pre-elimination strategies for malaria huge resources are also required in terms of technical manpower and quality material. There by matching financial resources are essential.

During XI Plan period various initiatives for prevention and control of malaria and other vector borne diseases like Kala-azar, Dengue, Chikungunya, Japanese Encephalitis and Elimination of Lymphatic Filariasis have been initiated which has shown the impact, however, various constraints were experienced and during XII Plan those issues have been addressed. The Sub-group of experts have found the plan document technically sound for implementation and operationalisation with a view to achieve the desired goal. The gaps identified have been addressed in the XII Plan by proposing new initiatives and shift to certain strategy which will result in implementation and ultimately achieving the desired goal of physical and financial performance. It has been learnt that without strengthening the state component the objective and targets of the programme cannot be achieved. In view of it the provisions to fill up all gaps at the centre and states have been considered and budget provisions have been made.
PROPOSED ACTIVITIES FOR PREVENTION AND CONTROL
ACTIVITIES FOR VECTOR BORNE DISEASES DURING XII
FIVE-YEAR PLAN

1.1 MALARIA

1.1.1 Key lessons learnt from XI Five Year Plan:

- **Human Resource development:**
  - The program has made available a pool of trained technical and administrative personnel to function at national, state, district and sub-district levels for better programme management in collaboration with PHFI, NCDC, NIHFW and NIMR. Additional human resources were provided under programme supported by GoI for MPWs and through external assistance for state/district consultants and at sub-district level MTS/KTS and LTs.
  - Their recruitment, deployment and timely payment towards their salary, mobility and honorarium has been the issue.
  - Initiatives have been taken for building partnerships with public sector, private sector, NGOs and civil society.
  - Sustainable building of managerial capacity is another important challenge. Capacity building is required at the national, regional, state, district and sub-district level. In addition, the rapid decentralization of malaria control has led to a greater need for skills (especially program management) at all levels. There is a dearth of technical experts (e.g. M&E specialists, entomologists, lab technicians and other health staff). There is a strong need to enhance the managerial and technical skills of all health personnel, especially in areas where there is a high demand.

- **Surveillance:**
  - Strengthening of surveillance has been achieved at village level by involvement of ASHAs. Under NRHM, ASHAs have been deployed in villages. Dte. of NVBDCP has involved these ASHAs in identified high endemic district with provision of performance-based incentives for detection and treatment of cases at village level. The services rendered by ASHAs have been found to be very useful in timely diagnosis and treatment and improving the surveillance.
  - M&E information systems have been revised. The reporting formats have been updated to include newer interventions such as RDT, ACT and LLINs. Additional staff for M&E have been provided to track the essential indicators which are measured through regular surveys and strengthened routine health information systems. These were put in place in project areas and the lesson learnt has been, that effective monitoring can be achieved through systematic intensified efforts. The revised M&E has been now extended to entire country.
  - Sentinel sites have been identified in each of the WB and GF project districts for monitoring of management of severe malaria cases and mortality due to malaria. The data received from the sentinel sites have helped the state and the project districts to identify the problem both in geographical and functional areas and has helped them to take corrective actions at the local level.
  - Diverse eco-epidemiological paradigms are a challenge. A major challenge for malaria control programme in India is to ensure access to high-quality- & affordable drugs according to updated national drug policies through all types
of providers. Involvement of private providers in the treatment of Malaria cases as per country specific drug policies is also a major challenge.

- A significant part of the malaria burden is borne by isolated ethnic groups or new settlers who reside close to the forest and mobile/migrant forest workers (e.g. for logging, mining, plantation work and field cultivation). It is a challenge to provide interventions to such populations in these areas because they are hard to reach and traditional vector control interventions (LLINs / ITNs, IRS) are not always effective in these settings.

- In some states, the minimum target of surveillance is not achieved whereas in some, it is higher than the target. To achieve the minimum target is an issue to be addressed. Moreover the data on surveillance is captured under public health facilities hence excludes persons examined under private facilities, private facilities like private practitioners, RMPs, private hospitals and corporate hospitals in urban areas.

- **Diagnostics:**

  - During the XI Plan, in addition to Parasitological diagnosis through microscopy, Rapid Diagnostic Tests (RDT) has been introduced for diagnosis of Pf cases. Under the programme, approximately 100 million tests are done annually by microscopy and RDTs. Approximately 12–14 million RDTs are being procured annually for use by community level health volunteers (ASHAs) and health workers (MPHWs) in difficult to reach areas where microscopy facilities are not reachable. This has helped in improving the surveillance and early diagnosis thus facilitating timely treatment at the village level through ASHA Volunteers.

  - The system for quality control of microscopy under programme is in place by cross-checking of all smears tested positive and 5% of negative slides. Standard Operating Procedures (SOP) have been developed for quality control of microscopy. Similarly, the guidelines have also been developed for the quality control and quality assurance of RDTs.

  - Provision of diagnostic services through rapid diagnostic tests or microscopy and pre-packaged ACT to the entire population through public and private healthcare systems, including remote/inaccessible rural villages is another important challenge. Functional microscopy services at PHC level as per the recommended norms of 30000/20000 population in plain/hilly & difficult areas, respectively have not yet been established by majority of States.

  - Further, the RDTs used currently are monovalent (Pf specific), thus the delay in diagnosis Pv cases and their subsequent treatment remains delayed due to time lag of microscopy examination. The bivalent RDTs (for both Pf and Pv) will address this problem.

- **Treatment:**

  - A paradigm shift has occurred in the treatment of Pf cases in high burden districts. Initially, ACT was provided to falciparum cases reported in chloroquine resistant PHCs and surrounding cluster of PHCs. Later ACT was rolled out for treatment of all Pf cases in the high burden districts. As per the National Malaria Drug Policy (2010), all uncomplicated falciparum cases in the country are being treated with ACT. Therapeutic efficacy studies are conducted on a regular basis in 15 sentinel sites across the country by Dte. of NVBDCP in collaboration with National Institute of Malaria Research (NIMR), for updating the National Drug policy. Programme has also initiated the Pharmaco-vigilance studies to monitor the adverse effects of antimalarial. It has shown that very few side effects are reported with the ACT.
• Irrational use of Artemisinine based compounds especially by the unqualified private providers is a major challenge. Monitoring, preventing, and containing anti-malarial drug resistance is a big challenge especially in areas adjoining to international borders. The strengthening of monitoring systems for drug resistance is therefore essential in collaboration with research institutes like ICMR.

• **Interventions for vector control:**
  • In addition to Indoor Residual Spray (IRS), other vector control measures like long-lasting insecticidal nets (LLINs), larviciding and environmental management are being upscaled appropriately. Non health sector networks are also being involved in distribution of LLINs enabling improved access in remote areas. Private organizations or consortia are also being contracted out for conducting IRS by the states where quality of spray is an issue as spraying is a skilled job.
  • To address the environmental issues related to safe use of insecticides, larvicides and non-degradable diagnostic equipments, an `Environment Management Plan` has been developed for ensuring proper transportation and storage, safe handling and usage of insecticides to minimize adverse impact on environment.
  • Poor community acceptance and low coverage of IRS are reported from the field. Low coverage of IRS is often due to non/inadequate funds with the states for procurement of decentralized insecticides as well as operational cost to meet the spray wages. Further, supply and usage of ITN /LLINs is restricted to few high endemic districts. Scaling up of LLINs for achieving universal coverage is a major challenge.
  • Increased levels of resistance to insecticides in vector mosquitoes is an important technical challenge.
  • Entomological surveillance is affected due to poor manpower status both at States and Zones including Regional Offices of Health and Family Welfare. Out of 35 State entomologists, only 7 are in position. Similarly, against 72 Zonal Entomologist posts, 35 are in position. At the ROHFW (GoI), all the 16 sanctioned posts of Assistant Director (Entomologist) are lying vacant. Even at Dte. NVBDCP –HQ out of 9 posts, 5 are vacant. Because of this gap the latest data on various entomological parameters is lacking which is very crucial for facilitating the decision about appropriate vector control measures.
  • Further, due to lack of mobility support, large vacancies of insect collectors, shortage of entomological kits and insufficient support for capacity building, the existing entomological units could not be optimally utilized, which resulted in to lack of data generation

• **Logistics management:**
  • In the initial years of the plan period, anti malarial drugs & other drugs for vector borne diseases, insecticides, larvicides, rapid diagnostic kits for malaria and Kala Azar, Long lasting Insecticide treated nets (LLINs) were being procured by G O I. Subsequently, Govt of India has decentralized the procurement of certain commodities to be procured by states out of cash assistance.
  • Delay in release of budget from state society for the purpose has resulted in untimely availability of required items.
  • A supply chain monitoring agency has been hired under WB supported project which need to be sustained.
• Malaria in Urban areas:

- The large number of developmental activities, especially construction activities, have resulted in aggregation of labour leading to mushrooming of slums. Most of local bodies are found lacking in financial resources to carry out malaria control measures and State Governments also could not supplement the resources to bear the extra burden to contain the emerging malaria problem. No corresponding additional infrastructure and budgetary provision have been made resulting in additional pressure on the existing staff though spatial spread of urban areas has occurred, which has resulted into poor disease surveillance and inadequate vector control measures. This necessitates intensification of vector control measures through the existing scheme and larger involvement of other sectors responsible for creating mosquitoic conditions.

2.1.2 The XII Plan - objectives, strategies, and activities.

**Objective:**

- To bring down annual incidence of malaria cases to less than 1 per 1000 population at national level by 2017 and its monitoring at district level.

**Targets:**

- ABER > 10 
- API < 1 per 1000 Population

**Indicators**

- All fever cases suspected for malaria are to be screened (70% through quality microscopy and 30% by Rapid Diagnostic Test).
- All *P. falciparum* cases will be treated with full course of ACT and all *P.vivax* cases will be treated with 3 days chloroquine and 14 days primaquine.
- All health Institutions with indoor facilities will be equipped with microscopy facility and RDT for emergency use and injectable artemisinin derivatives.
- All district and Sub-district hospitals will be strengthened as per IPHS with facilities for management of severe malaria cases in malaria endemic areas.

**Strategy**

The strategy adopted during XI Plan period was for malaria control. Considering the feasibility of malaria elimination defined as no indigenous transmission, it is proposed to change the focus of strategies based on endemicity level. This will facilitate in achieving long term goal of elimination. This necessitates the stratification of states based on incidence as to decide and execute area specific intervention. This would lead to reduction of incidence in high endemic areas and sustain it in low endemic areas which will pave the way to enter the country into “Pre- Elimination stage”. To reach “Pre-Elimination stage”, entire country would require adequate inputs in terms of technical, logistic and financial support. Accordingly the states have been stratified as under:
o **Category 1**: States with less than 1 API including all the districts in the state with less than 1 API

o **Category 2**: States with less than 1 API with few districts reporting more than 1 API

o **Category 3**: States with more than 1 API with either all the districts with more than 1 API or few districts with less than 1 API and few with more than 1 API

**The broad strategies** to be adopted are as under:

- **Epidemiological Surveillance and Disease Management**
  - Early case detection by further strengthening the existing surveillance system and involving private providers
  - Strengthening of referral services
  - Epidemic preparedness and rapid response
  - Involvement of private providers

- **Integrated Vector Management**
  - Effective entomological surveillance
  - Source Reduction using minor engineering methods.
  - Biological control using larvivorous fish and bio-larvicides
  - Larvicides (Chemical)
  - Indoor Residual Spray in selected high risk areas
  - Insecticide Treated Nets (ITN)/ Long Lasting Insecticidal Nets (LLIN)
  - Implementation of legislative measures
  - Operational research

- **Supportive Interventions:**
  - Behaviour Change Communication
  - Public Private Partnership & Inter-sectoral convergence
  - Human Resource Development through capacity building
  - Operational research including studies on drug resistance and insecticide susceptibility
  - Logistic Management Information System (LMIS)
  - Monitoring and evaluation through periodic reviews/field visits and web based Management Information System

**Activities**: Activities proposed for different strategies and strata of states are as follows:

- **Epidemiological Surveillance and Disease Management:**
  1. **Early case detection by further strengthening the existing surveillance system and involving private providers**
     - Strengthening of active, passive and sentinel surveillance by providing additional MPWs, LTs and involving more ASHAs, GPs, RMPs and Medical practitioners of other health partners
     - Strengthening diagnosis by providing additional microscopes and up-scaling use of RDTs.
• Diagnostic and treatment facilities will be strengthened by increasing the number of microscopy centers and capacity building of technicians, up-scaling of RDTs and providing microscopes and by establishing malaria clinics @ 1 clinic per 20,000 population in urban slums.
• Ensuring continued availability of diagnostics and anti-malarial drugs at all levels of treatment
• Adopting evidence-based newer technologies for improving diagnosis and treatment services like introduction of bivalent RDT, fixed dose ACT etc.

2. Strengthening of referral services
• For rapid transportation of severe malaria cases to the nearest health facility, transport facility under NRHM be used and in case in certain areas if such facility is not available, programme will support transportation.
• Strengthening of referral centers by equipping them with requisite diagnostics, anti-malarials for management of severe malaria cases.
• Optimal utilization of the available life saving support systems under NRHM.

3. Epidemic preparedness and rapid response
• Use of Early warning System for detection of likely epidemic in coordination with IDSP
• Strengthening of Rapid response team in each district, with financial support from NVBDCP during outbreak situation
• For tackling outbreak, adequate antimalarials, diagnostics, insecticides etc. will be provided by earmarking 20% buffer stock

➢ Integrated Vector Management

1. Effective entomological surveillance
• Entomological surveillance would be carried out by the Zonal Entomologist in the country. These entomological teams will survey for entomological parameters viz., vector density (adult and larval), seasonal prevalence, susceptibility status to insecticides in vector mosquitoes, feeding behaviour, quality of IRS spray, residual effectiveness of insecticides through conducting Cone Bioassays test and. These parameters would provide data on impact of the ongoing vector control interventions in the Zone to suggest for mid course corrections. These teams will also assess the effectiveness of ITNs and LLINs.

2. Source Reduction using minor engineering methods.
• Control of larval breeding would be done to limit the transmission of the VBDs. Clearing the margins of the water bodies, de-weeding to ensure proper flow of water, filling of small temporary water collections will be done to limit the breeding. However, for large excavations and water bodies, the technical guidance for prevention of mosquito breeding would be provided to the concerned agencies who are responsible to create mosquitogenic conditions.

3. Biological control using larvivorous fish
• The larval control using larvivorous fish is feasible in certain ecotypes and settings as such this method would be propagated in these areas as
supportive intervention to control the breeding. The source for supply of larviorous fish, its applications and monitoring would be put in place.

4. **Larvicides**
   - Presently Temephos - the chemical larvicide and bio-larvicides are used in programme. Their judicious use would be monitored.

5. **Indoor Residual Spray in selected high risk areas**
   - Depending on the API different areas would be covered with appropriate insecticide. About 80 million population are covered with IRS annually. To ensure quality spray, supervision would be strengthened along with safety precautions.

6. **Insecticide Treated Nets(ITN)/ Long Lasting Insecticidal Nets (LLIN)**
   - LLINs have been introduced in the program as personal protection tool and to interrupt transmission. The Upscaling of LLINs is on priority and about 29 million LLINs are expected to be procured and distributed in next five years.

7. **Implementation of legislative measures**
   - The civic by-laws for prevention and control of mosquitogenic conditions are existing in few states/towns. The state governments would be emphasized to extend these by-laws in other towns/cities and implement effectively.

➢ **Supportive Interventions:**

1. **Behaviour Change Communication**
   - Establishing IEC/BCC Cell at Dte. NVBDCP with regular communication expert supported with media assistants.
   - Development of strategy specific prototype materials and Healthy Public Policy through hiring an agency.
   - IEC/BCC activities through print and electronic media at national, state and regional level.
   - Strengthening of IEC/BCC activities at grass root level through Inter-personal communication, folk media etc. for social mobilization towards acceptability of services provided under programme.
   - Special campaigns during Spray, distribution of LLINs and anti-malaria month.
   - Strengthening of service delivery through Vulnerable community plan for marginalized sectors.

2. **Public Private Partnership(PPP) & Inter-sectoral convergence**
   - Improving outreach services through partnership with Non-Governmental Organizations (NGOs), Faith Based Organizations (FBOs), Community Based Organizations (CBOs) and Local self-government (Panchayat).
   - Implementation of Existing 6 PPP Schemes of NVBDCP by earmarking separate budget.
   - Flagging the issue of Inter-sectoral convergence through planning commission to various Ministries like Agriculture, Urban Development, Education, Information and broadcasting, Tribal and Social welfare, Railway, Surface transport, civil aviation, Port Health Authorities and Textiles etc to
ensure support and incorporation of Health Impact Assessment component in the projects under respective ministries.

- State level Annual Inter-sectoral meeting and districts level quarterly meeting for sensitization

3. Human Resource Development through capacity building

- Providing additional HR like National, regional, state, zonal and district consultants, Malaria Technical supervisors/Kala azar technical supervisors at sub district level, LTs and MPWs at PHC and subcentre level respectively to bridge the gap so that implementation of programme activities are carried out efficiently.
- Emphasizing states for creation / filling up of required positions at various levels
- Continuation of performance based incentives to the programme personnel including ASHAs /Village level volunteers
- Capacity building of trainers by involving medical colleges and apex institutions like NIH&FW for further providing job-specific training to newly recruited personnel and Reorientation of the existing programme personnel.

4. Operational research including studies on drug resistance and insecticide susceptibility

- To monitor the drug resistance, pharmaco-vigilance, quality assurance and insecticide resistance the operational research studies would be undertaken with the help of NIMR
- Studies on vector bionomics and changes in respect of their biting and resting behaviour.
- Research also would be conducted for the development of new tools and methods for vector control.

5. Logistic Management Information System (LMIS)

- Procurement Division would be strengthened by recruiting regular procurement specialist of Joint Director level officer supported with consultants.
- Supply chain monitoring would be done through hired agency, so as to ensure the availability of programme commodities upto PHC level.

6. Monitoring and evaluation through periodic reviews/field visits and web based Management Information System

- The Existing NMMIS would be made fully functional by replacing all old computer and providing internet facility at district level.
- Communication support would be provided i.e. computer/laptop /palmtop and communication systems like data-card, internet, mobile, telephone etc. would be provided to MIS staff as per their role.
- Integration of reporting of core indicators with the NRHM –HMIS.
- Establishing Sentinel Surveillance Sites (SSS) at the districts and prominent hospitals to monitor the trends of disease morbidity and mortality.
- Periodic review at all levels and programme evaluation at periodic intervals
- Positioning of Consultants at national, State and district level, VBD Technical supervisors at block level and data manager at district level
• Use of Lot Quality Assurance Sampling (LQAS) methodology at sub-district level for monitoring the implementation of programme and project activities

**Strategy for different categories of the states to be intensified:**

○ **Category 1**: States with less than 1 API including all the districts in the state with less than 1 API

  To keep a vigil in this category of the state is very crucial as low endemic areas are more outbreak-prone in malaria. Therefore, surveillance will be strengthened through passive and sentinel institutions.

  ▪ **Epidemiological Surveillance and Disease Management:**
    ▪ Focus on Passive & Sentinel Surveillance
    ▪ Involvement of Govt. Health system (State and central), Medical Colleges (Public and private), Railways, defense, paramilitary forces, ESIC, AYUSH, Mission Hospitals and
      ▪ private providers – enlisting, training, logistic support, reporting
      ▪ laboratory technicians – enlisting of private laboratories, training, logistic support, reporting
    ▪ Screening of migrants in project areas
    ▪ Referral system (if necessary)
    ▪ Epidemic Preparedness and Response

  ▪ **Integrated Vector Management (IVM)**
    ▪ Source reduction, biological control, insecticidal focal/space spray during outbreaks/epidemics and complex emergencies, effective entomological surveillance in sentinel and random sites at quarterly intervals by the designated teams.

  ▪ **Supportive interventions** including IEC and BCC activities with the involvement of village health and sanitation committee meetings on monthly basis and involvement of other sectors for social mobilization towards prevention and control of malaria

○ **Category 2**: States with less than 1 API with few districts reporting more than 1 API

  Though the average API of these states are less than 1, few districts are above 1 API, more intensified surveillance and interventions would be required in this category of the state. Therefore, surveillance will be strengthened through active, passive and sentinel institutions.

  ▪ **Epidemiological Surveillance and Disease Management:**
    ▪ Strengthening of referral services – total support from NVBDCP for strengthening of district and sub-district hospitals under NRHM (high power committee under chairmanship of Dr. Shrinath Reddy)
    ▪ Epidemic preparedness and rapid response

  ▪ **Integrated Vector Management (IVM)**
- IVM will be implemented involving entomological surveillance in sentinel and random sites at quarterly interval, appropriate use of insecticides for supervised IRS with full support from NVBDCP, use of LLIN (if supported and feasible), intensified anti larval operation in urban and peri-urban areas within these states/districts along with supportive intervention components like use of fish, source reduction, minor engineering etc. and use of focal spray in case of any increase or outbreak.

- **Supportive interventions** including IEC and BCC activities with the involvement of village health and sanitation committee meetings on monthly basis, inter-sectoral collaboration meetings in district and blocks with API more than 1 and involvement of other sectors for social mobilization towards prevention and control with coordinated efforts of district programme managers.

  - Category 3: States with more than 1 API with either all the districts with more than 1 API or few districts with less than 1 API and few with more than 1 API. This category needs maximum attention for all the activities with a view to reduce disease burden. Therefore, surveillance will be strengthened through active, passive and sentinel institutions with all possible inputs for microscopy, RDT and collection of data and its quick reporting.

- **Epidemiological Surveillance and Disease Management:**
  - Early Case Detection and complete treatment
  - Active Passive and Sentinel surveillance,
  - Early diagnosis and complete treatment
  - Management of severe malaria cases (strengthening of district and sub-district hospitals)
  - Referral mechanism (NVBDCP funding for referral including transportation)

- **Integrated Vector Management (IVM)**
  - IVM will be implemented involving
    - entomological surveillance in sentinel and random sites at monthly interval,
    - appropriate use of insecticides for supervised IRS with full support (including spray wages) from NVBDCP,
    - use of LLIN
    - treatment of community owned bednets,
    - intensified anti larval operation in urban and peri-urban areas within the states/districts
    - Upscaling use of larvivorous fish, Outsourcing of fish use through NGOs would be explored with PPP model.
    - Source reduction, minor engineering etc. would be achieved through involvement of panchayat raj at village level.

- **Supportive interventions** including IEC and BCC activities with the involvement of village health and sanitation committee meetings on
monthly basis, inter-sectoral collaboration meetings in district and blocks with API more than 1 and involvement of other sectors for social mobilization towards prevention and control with coordinated efforts of district programme managers. Monitoring and supervision for the activities as well as monitoring towards timely performance of the activities.
2.1.3. Modalities to improve efficiency and quality of services at primary, secondary and tertiary levels

**Primary level:**
- ASHA under NRHM, Aganwadi Workers of ICDS and Community Volunteers of NGOs would be trained for diagnosis (using RDT) and treatment services.
- The diagnostic capability of PHC in endemic areas would be improved by ensuring positioning of trained laboratory technician with functional microscopes in all PHCs. All the CHCs would be equipped to provide in-patient facility for management of *Pl* malaria cases.
- Laboratory surveillance from private sector would be enhanced by coordination with private practitioner and private laboratories.
- Logistic and supply chain management will be strengthened to ensure continuous supply and avoid expiry of drugs and diagnostics.

**Secondary level:**
- Training of Medical Officers, Lab. Technicians and Community Volunteers of public and private sector would be taken up to strengthen the quality of services at secondary level.
- District level hospitals would be equipped with case management facilities including laboratory services to manage the severe and complicated malaria cases.
- The investigation of each death due to malaria would be taken up, so that, corrective action for appropriate management would be in built in the system itself and it would serve as a public health tool and also to measure the effectiveness of the programme.

**Tertiary level:**
- Sentinel sites will be established at the District and sub-district level hospitals especially in high-disease burden areas to monitor the trend of malaria morbidity and mortality.
- The Medical College hospitals and other referral hospitals will manage all referral cases.
- The state health authorities will coordinate with Medical Colleges for malaria control activities.
- Medical Colleges will undertake operational research on use of effectiveness of rapid diagnostic kits, efficacy of combi pack and therapeutic efficacy studies etc.
- Medical colleges will also be involved in capacity building by creating district level resource pool for training.

**Plan for improving reporting:**
- Upsurge in VBDs in recent years has led to general feeling that the VBDs’ surveillance activities need to be increased to keep eye on increase in number of cases of these VBDs, so that, preventive actions can be taken up immediately to contain the outbreaks /epidemics of these VBDs. The 12th plan proposes following measures to overcome the bottlenecks thereby improving the reporting system. At the same time NVBDCP is planning to engage human resources at various levels to increase and improve the surveillance. The details of the proposals for the same are given below:
• States shall create 66120 and fill up 88483 positions (inclusive of existing vacancy against sanctioned) of MPWs as per the norms at the sub center level with 100% financial assistance from Government of India through NRHM.

• Create 10682 post and fill up 15244 position (inclusive of existing vacancy against sanctioned) of one microscopist at PHC level covering 30 to 40 thousand populations.

• Positioning 5924 VBD Technical supervisor (@ one VBD Technical Supervisor at block) level for effective supervision and monitoring.

• State shall be encouraged to fill up all posts of DMOs on priority basis

• 620 District VBD consultants (excluding high altitude districts) will be provided from GoI.

• Enlisting the support of IMA and ushering in public private partnership models in the programme to improve diagnosis and treatment.

• Up-scaling of use of RDT (including bivalent RDTs)

• Provision of 15,000 microscopes.

• Quality control of malaria microscopy by strengthening of Regional Offices (GOI), state /zonal laboratories.

• Quality control of RDT by identified institutions.

• Advocacy with private and other sectors.

• PPP schemes for case detection and treatment.

• Monitoring and Evaluation is important at National, State, district and local levels to track and guide the programme implementation and its impact. Robust and reliable data are critical for monitoring progress toward achieving the goals and disease specific targets. The country programme is having detailed Monitoring and Evaluation Plan which has been revised from time to time to include the monitoring of newer interventions. During the XI plan period the monitoring and evaluation activity was strengthened with the funding from World Bank supported NVBDCSP. During this period, monitoring and evaluation system of country malaria programme was reviewed twice (in 2008 and 2010) using the Monitoring and Evaluation System Strengthening Tool (MESST) developed by the Global Fund.

• The reporting system of NVBDCP is being integrated with NRHM-HMIS portal. In NRHM-HMIS data entry is being done at district level for both data compilation (reporting) and recording in a consolidated form.

• **Monthly Epidemiological Surveillance:** Based on the monthly report received through M4 in HMIS, epidemiological analysis would be strengthened at district, state and national level to identify the trends of malaria cases and deaths to identify the areas for intervention.

• **Sentinel surveillance & Death Monitoring:** Data generated at the sentinel surveillance sites established at the two/three SS Hospitals in a district would be compiled at the DMO office.

• **M4: Fortnightly Report of Cases - Provider wise:** this provider wise M4 is being compiled similar to the M4 (Health facility wise), based on the M1 reports from all reporting units. This would provide a fair estimate of the cases being diagnosed and treated by each category of health provider.
2.1.4 Urban Malaria Scheme (UMS):

Apart from malaria, other vector borne diseases like dengue, chikungunya, JE, filariasis and kala-azar are also increasingly becoming frequent in urban areas. Integrated control strategies are needed by meeting the requirement of additional staff and matching budgetary provision.

It is proposed to enhance the capacity of exiting 133 urban cities inclusive of 2 new towns to manage all VBDs prevalent in the urban areas. The vector control measures will focus to deal with all VBDs and special emphasis would be given for implementation of health impact assessment (HIA) component in all major developmental projects through enforcing appropriate legislature measures. The key lessons learnt during XI plan period and current challenges with respect to urban areas have already been outlined in the overall malaria component. Based on it the objectives, strategies and activities have been proposed under XII Plan for UMS.

Objectives:
1. Prevention of malaria mortality and reduction of morbidity in identified urban areas.
2. Effective management and control of other VBDs

Targets:
1. To improve vector surveillance and elimination of breeding at the source
2. To bring down cases of malaria and other VBDs in urban areas

Strategy:
(i) Detection and management of malaria cases and other VBDs
(ii) Integrated Vector Management
(iii) Capacity building and BCC
(iv) Intersectional coordination

Activities:

(i) Diagnosis and case management:
➢ Diagnostic and treatment facilities will be strengthened by establishing malaria clinics @ 1 clinic per 20000 population with special focus to urban slums.
➢ Involvement of other sectors/private providers for diagnosis, treatment and reporting
➢ Sentinel sites will be equipped with necessary diagnostic kits for diagnosis of VBDs

(ii) Integrated Vector Management by
• Larval control through Source reduction, Chemical larviciding and use of larvivorous fish and minor engineering
• Space spray during the outbreaks/epidemic
• LLINs in targeted vulnerable population of identified wards/burroughs under Municipal Corporations of mega cities.

(iii) Capacity building and BCC
• Training of personals involved in anti-malaria activities in urban areas including engineers and town planners
• Focused BCC
- Advocacy workshops for NGOs/ CBOs/ FBOs/ stakeholders for their involvement in VBD control activities
- Social mobilization through inter-sectoral collaboration.

(iv) Inter-sectoral coordination

- Adoption of Model civic bye-laws for prevention and control of vector breeding
- Health Impact Assessment (HIA) of Developmental projects

2.1.5 Entomological Surveillance

To monitor the programme activity at zonal level (5 to 7 districts), the zonal offices were established with the responsibility of monitoring of entomological and entomological data and operational aspects pertaining to districts under their jurisdiction. The zonal officer since 1977 (after Modified Plan of Operation) had a special component of zonal entomological team to monitor the vector densities, susceptibility status of vector to the insecticides/larvicides, vector incrimination, bionomics, etc. and to correlate the entomological data with entomological parameters. The technical guidelines and monitoring formats for entomological parameters were made available from time to time to the states. However, the entomological surveillance by these zones have been affected as the priority to entomological work was not accorded in many of the states and many posts falling vacant have not been filled up. With a view to generate latest information it is proposed to strengthen and intensify entomological surveillance in the country by providing additional technical human resource like entomologist, insect collectors and mobility support for field visits especially during night times as the entomological surveillance are carried out whole night. The cost towards different components have been integrated into proposed budget for malaria and also under cross cutting issues separately.
**Proposed Budget:** The estimated budget for prevention and control of malaria including Urban malaria and strengthening entomological surveillance as enclosed. The cross cutting issues and related budget is shown separately.

### Proposed Budget for Malaria including Urban malaria & entomological surveillance

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Rs. In Crore
2.2. Dengue & Chikungunya (proposed plan during XII Five Year Plan)

2.2.1 Key Lessons Learnt from XI Five year Plan

Case Surveillance

The surveillance for dengue and Chikungunya should be proactive. Most states conduct reactive surveillance with health authorities waiting until medical community recognizes transmission. Passive surveillance is not sensitive enough for early detection of outbreaks, since all clinical cases are not correctly diagnosed, especially during the inter-epidemic period when physicians may not suspect dengue, and thus mild cases may not enter the health care system at all. Indeed, in most cases epidemics are near peak transmission before they are recognized and confirmed as dengue. By then, it is generally too late to implement effective preventive measures that could have an effective impact on transmission and thus on the course of the epidemic.

Functioning of Sentinel Surveillance Hospitals

Though the numbers of Sentinel Surveillance Hospitals (SSHs) were increased every year to augment diagnostic facilities in endemic States, their functioning had been a great concern.

Apex Referral Laboratories are not conducting regular Sero –surveillance, hence clinicians do not get any information on prevailing/circulating virus serotype in a given time and place. Severity of dengue depends on type of virus serotype (s) prevalent in an area.

Reporting

A few states submit their data daily but some states submit their report very late. Besides, private sector is not submitting the data on cases and deaths which were treated by them as dengue is not a notifiable disease in some states. Due to which real disease burden could not be estimated.

Fever alert surveillance

For reporting of increase in fever cases in a village, the guidelines were developed and sent to the states in 2007. However, early capture of an incipient outbreak through health workers and grassroots level functionaries (ASHAs, Anganwadi workers and MPWs etc) are not effective in the states.

Rapid response

A trained rapid response team with all supportive logistics including mobility support in each endemic district has been envisaged. However, with the transfer or superannuation or multiple job responsibilities of any team member, the team becomes incomplete. Besides, the mobility support is often not made available for timely movement of the team. The reports of the Sentinel surveillance Hospital are also received late. Due to these, many impending outbreaks could not be interrupted.
in incipient stage. Dengue and Chikungunya outbreaks evolve quickly and needs immediate action to prevent its further spread.

**Case management**

Though case fatality rate has declined, most of, deaths due to dengue (if not all) are potentially avoidable. One of the primary problems in management of dengue is misinterpretation and resultant confusion because of the term “haemorrhagic fever” Hence a reorientation training as per National guidelines for clinical management of Dengue cases on assessment of the haemodynamic state, prompt but judicious fluid replacement in dengue management is necessary for all the treating physicians at tertiary, secondary and primary level hospitals including private sector.

**Vector surveillance and Management**

In absence of any drug or vaccine against dengue and chikungunya infection, vector control is the main stay to prevent transmission. Due to vector bionomics, adult vector control is not feasible. Larval control needs constant and concurrent monitoring of the vector breeding. Effective mosquito control primarily based on source reduction is virtually non-existent in most of the Dengue and Chikungunya endemic states/towns. Besides, emphasis has been placed on ultra-low volume (ULV) insecticide space sprays for control of adult mosquitoes though it is relatively not very effective approach for controlling *Ae. Aegypti* which are very active during day time.

**Lack or poor infrastructure**

The reality of limited financial and human resources has resulted in a "crisis mentality” with emphasis on implementing emergency control methods in response to outbreaks rather than on regular programme to prevent transmission. In fact, most of states have no staff or resources to implement the strategies for dengue/chikungunya prevention and control during inter-epidemic period. The vertical dengue/chikungunya programme based on vector control by field workers visiting every household in a specific area to eliminate breeding is practically getting setback due to increasing urbanization, budgetary constraints, lack of personnel, increasing numbers of “closed” households and householder’s rejection for the emptying and cleaning of domestic water-storage containers.

**Monitoring and evaluation**

Due to improper monitoring and evaluation programme implementation is hampered at State and district level for which early warning signals are not captured on time. Entomological component is totally absent in most of the States/Municipalities and very weak or poor in states/towns. Out of 72 Entomological Zones, posts of Entomologists are vacant in 34. Similarly, out of 35 state Entomologist only 10 are in position. Wherever present they do not have the facilities like mobility support or other logistics to carry out entomological surveillance especially in early morning, late evening and during night hours.

**Enactment of Legislation**

At the national level, all countries are signatories to the International Health Regulations which have a specific provision for the control of *Ae. aegypti* and other disease vectors around international seaports/airports. Besides, Dengue is added in the list of diseases that require mandatory reporting to WHO by each Country.
Dengue needs to be added in the list of diseases that require mandatory notification by each state. It was envisaged in the beginning of XI Five Year Plan to develop civic byelaws by each state to prevent mosquitogenic conditions in households/premises. Building byelaws for health impact assessment in all development projects and building construction activities having inbuilt provisions of mosquito breeding free premises covering all aspects of environmental sanitation in order to effectively prevent breeding of Dengue and Chikungunya vector. However, Most of the States could not develop their byelaws. Though a few municipalities in the country, namely Mumbai Municipal Corporation, New Mumbai Municipal Corporation, Municipal Corporation Delhi, Chandigarh, Goa and Chennai etc. have adopted legislation for the prevention of “nuisance mosquitoes”, they lack its implementation at the ground level. Legislative support is essential for the success of not only dengue control but also for all those diseases which are caused by mosquitoes like malaria, Chikungunya, filaria etc.

2.2.2 Objectives

• To reduce the Dengue case facility rate to below 1%
• To reduce the incidence of Dengue and Chikungunya
• To strengthen the nationwide surveillance mechanism for Dengue and Chikungunya

Targets

• Dengue case facility rate to below 1%
• Functional Sentinel Surveillance Hospital in all endemic districts/towns/cities
• Functional Rapid Response Team in all endemic districts/towns/cities

Indicators

• Dengue case fatality rate
• Dengue and Chikungunya incidence
• No. of functional Sentinel Surveillance Hospital
• No. of functional Rapid Response Team

2.2.3 Initiatives

To reduce the burden of Dengue and Chikungunya, a new approach to fully integrate disease and vector surveillance, vector control, clinical case management and capacity building of health personnel are needed. This is especially important as GOI has also health sector reform efforts for the forthcoming 12th Five year plan and the fact that most local health services, now responsible both politically and administratively for prevention programs, are not sufficiently established to take on these programmes.

In view of the above a need has arisen to revisit the ongoing strategies of Long Term Action Plan and develop a programmatic and comprehensive Mid Term Plan for prevention and control of Dengue and Chikungunya. The Committee of Secretaries under the Chairmanship of Cabinet Secretary on 26.05.11 approved the Mid Term Plan for prevention and control of Dengue and Chikungunya in the country. The thrust Areas of Mid Term Plan are:
• Focused monitoring and improved reporting by strengthening the Dengue control programme.
• Strengthening diagnostic facilities by establishing at least 1 Sentinel Surveillance Hospitals in each endemic district/town
• Improved and effective case management to bring down dengue case fatality rate.
• Strengthening of infra-structure in local bodies for source reduction activities.
• Effective intersectoral collaboration of various health and non health sectors.
• Capacity building of medical and para medicals on Mid Term Plan strategies.
• Sensitization of the community on source reduction activities through media mix IEC/BCC strategies as per Media Plan.
• Availability of trained entomological team and rapid response team in states and districts
• Timely and effective utilization of funds.

2.2.4 Strategies

• Surveillance - Disease Surveillance and Entomological Surveillance
• Case management - Laboratory diagnosis and Clinical management
• Vector management - Environmental management for Source Reduction, Chemical control, Personal protection and Legislation
• Outbreak response - Epidemic preparedness and Media management
• Capacity building- Training, strengthening human resource and Operational research
• Behaviour Change Communication - Social mobilization and information Education and Communication (IEC)
• Inter-sectoral coordination - Health, Urban Development, Rural Development, Panchayati Raj, Surface Transport and Education sector
• Monitoring and Supervision - Analysis of reports, review, field visit and feedback

2.2.5 Mechanism of Involvement of NGOs/PPP/community/local self government

Non-Governmental Organizations (NGOs), Community Based Organisations (CBOs), Faith Based Organisations (FBOs) can play an important role in source reduction activities. Social mobilization campaign for community awareness on source reduction activities will be carried out through inter-personnel communication, focused group discussion, advocacy workshops, inter-sectoral meetings, with monitoring and evaluation at all levels.

2.2.6 Modalities to improve efficiency and quality of services at primary, secondary and territory levels

Intensive supervision, capacity building during process of programme implementation through involvement of Inter Sectoral partners like Ministries of Urban Development, Rural Development, Panchayati Raj, research institutions involved in VBD, medical
colleges and schools will be initiated at state, district and PHC level. Besides, local leaders and NGOs will be involved.

2.2.7 Monitoring and Evaluation

Monitoring & Evaluation covers monitoring of all the activities for effective implementation of Mid Term Plan Strategies approved by Committee of Secretaries across the country, like functioning of all the identified Sentinel surveillance Hospitals, equipped with diagnostic kits and manpower, Functional entomological team in each district, Urban bodies & state level. All Hospitals having trained clinicians on National guidelines for case management, trained rapid response team (RRT) at district and municipality with mobility support & logistics, sustaining source reduction activities in each block/town/city and timely analyzing and interpreting all the reports and feedback. The expected outcomes at the end of XII plan are:

- Effective implementation of Mid Term Plan with focused monitoring at national, regional, state and district level,
- Case detection at early stages will improve case management leading to reduction in case fatality in Dengue and morbidity management in Chikungunya,
- Improved reporting specially in outbreak situation,
- Regular source reduction activities in all local bodies,
- Awareness amongst community towards prevention and control of Dengue and Chikungunya
- Enactment of bye-laws in all urban areas to prevent mosquitogenic conditions

2.2.8 Sustainability

In order to achieve the proposed objectives of 12th Plan by implementing the approved strategies, adequate funds/resources need to be provided to endemic states/UTs to sustain the activities effectively. Hence it is proposed to make a policy for separate budget head for Dengue and Chikungunya like Malaria, Kala-azar, and Externally Assisted Component. The release of funds from district to PHC & VHSC needs to be ensured under NRHM mechanism of financial release. During outbreak of emergent situation, the funds from NRHM can be supported proactively as has been done in past during Chikungunya outbreak in 2006.

The capacity of state programme officer and need to be developed on financial aspects to process the funds released from NRHM quickly and implement programme activity in a time bound manner.

2.2.9 Overlapping/Duplication within or across Health Programmes; convergence issues

The Dengue and Chikungunya control programme is already integrated within umbrella of NVBDCP. The strategies mainly focus on inter-sectoral convergence with other National Health Programmes, non-health sector departments, civil society organizations (Non-Governmental Organizations/Faith Based Organizations/ Community Based Organizations/ Panchayati Raj Institutions/Self-Help Groups), corporate sector, medical academia, professional bodies etc. Following the instructions of Cos, Ministries of Urban Developoment, Rural Development and Panchayati Raj have already issued instructions to their counterparts in the states for
implementation of guidelines to prevent mosquitogenic conditions and community sensitization.

2.2.10 Estimated budget (Activity and year wise) – The budget proposed has been worked out separately for various activities related Mid Term Plan which is as under:

**Surveillance**

Establishing Sentinel Surveillance Hospitals with laboratory facility in each endemic district/town/cities. Currently 311 Sentinel Surveillance Hospitals and 14 Apex Referral Laboratories have been identified.

Strengthening of Sentinel laboratories under NVBDCP for diagnosis of dengue and Chikungunya would be done to establish a network of laboratories with high level of intra & inter laboratory comparability of results for correctly identifying the true positives and true negatives through trainings in premier laboratories like NIV, Pune; NICD, Delhi. ELISA facility to Sentinel Surv Labs would be ensured.

Recurring grant of Rs 50,000 paid to Sentinel Surveillance Hospitals per year to meet the contingency expenditure has been proposed to increase to Rs 1.0 lakh per year to meet the operational cost as per NVBDCP guidelines. Similarly for Apex Referral Laboratories to Rs 2.0 lakhs from Rs 1.0 lakh to strengthen the training facilities, quality control of sentinel labs through cross-checking of tests and Serotyping of virus.

Funds will be provided to states for making ELISA readers or washers available in the Sentinel Surveillance Hospitals wherever necessary.

**Costs of test kits**

NIV would manufacture dengue and Chikungunya kits to be supplied to all the sentinel labs in the country. NIV would be provided financial assistance to produce and supply test kits IgM (dengue & Chikungunya) and NS1(dengue).

**Case management**

Strengthening District Hospitals for dengue case management & Rehabilitation of post CHK sequel, Medical rehabilitation including physiotherapy would be strengthened in the district hospitals by providing Rs.1 lakh each to the district hospital.

It is proposed to improve the capacity of doctors working in sentinel hospitals, community health centers, primary health centers in clinical management of dengue and Chikungunya. Trainings of the trainers (clinicians) would be conducted in premier institutes like AIIMS, New Delhi involving national/ international faculties (Clinical experts from dengue endemic countries in SEA/WP regions). Further in each state about 20 training batches of 30 medical officers each (2 days duration) would be taken up.

Appropriate clinical guidelines would be developed at the National level for management of dengue in view of the recent guidelines of WHO and would be circulated to states for replication and supply to the trainings.
Vector control and environmental management

- Source reduction activities to eliminate the vector breeding are the only effective tool for preventive Dengue and Chikungunya transmission. Community volunteers will be engaged to sensitize the households for reducing the productive breeding sources by making house to house visit. Dengue transmission is related to monsoon and which facilitate vector proliferation. Hence it is very essential to carry out this activities at least for 5 months (depending on local transmission and period). Due to the fund constraint the states and urban bodies are unable to carry out this most important activity.
- For cities having population above 40 lakhs 200 volunteers; cities with 10 to 40 lakh population, 100 lakh volunteers and cities with less than 10 lakhs population 50 volunteers have been proposed and funds are provisioned, for which urban area/towns have been categorized 3 levels.
- Similarly for rural areas also, funds to the tune of Rs.5 lakh will be provided to carry out source reduction activities in the blocks/panchayats.
- Funds are provisioned for hand operated Fogging machines, which would be procured if required.
- Outbreak response and Epidemic preparedness would be strengthened in all endemic and non-endemic districts. To strengthen the epidemic containment, Rapid Response Teams would be activated at state and district level. Operational cost would be provided to all the units.

Capacity building:

- **Strengthening human resource**

No additional infrastructure in terms of manpower has been provided after the integration of dengue and Chikungunya under the NVBDCP. Since both Dengue and Chikungunya are viral diseases and transmitted by the same vector mosquito and is being looked after by one division, it is proposed to strengthen the division of Dengue and Chikungunya by providing two Consultants for Monitoring & Evaluation, two Consultants for vector control, one Data Manager, two Office Assistant and one Office attendant to monitor the implementation of the strategies of Mid Term Action Plan for Prevention and Control of Dengue and Chikungunya by states and other stakeholders, coordinate with the States; provide technical guidance by reviewing the data and by field visits. Besides, monitoring the functioning of SSH & ARLs and supply of test kits also needs to be strengthened. It is proposed to budget for their salary, travel, office equipment etc. Details enclosed.

*Strengthening human resource at National HQ for Dengue & Chikungunya division has already been approved by CoS on 25-06-2011.*

**Training**

At the state and peripheral level Medical Officer, Prog Manager, Entomologist, MPW, ASHA/USHA trainings would be taken up.
- Capacity building of microbiologists and technicians would be taken up through training. In each state 9 batches of 25 participants each (5days duration) would be taken up.
- Capacity building of entomologist/assistant entomologist, insect collector etc. would be taken up. In each state, training total 9 batches of 25 each (5days duration) would be conducted.
- Printing of guidelines/manuals/ formats would be taken up.
Operational research

It is desirable to prioritize its research areas and develop new strategy by undertaking operational research with a view to improving its effectiveness and efficiency of the existing tools for giving greater scientific credibility to Dengue and Chikungunya control in India. At national level and state level, a number of research projects are planned.

Monitoring, Evaluation and Supervision - Analysis of reports, review, field visit and feedback

- Online (electronic) reporting will be introduced for improving weekly reporting from 300 districts from 23 endemic States/UTs in the first phase. The remaining 321 districts in 12 States/UTs will also be included in online reporting so that any area in the country will be alerted for any reported or indigenous case.
- It is proposed to develop a dedicated software for GIS Mapping for the entire country and to develop risk maps at appropriate levels and conduct periodic re-mapping (to be linked to periodic surveillance).
- To facilitate online reporting, data card and telephone call charges (mobile) would be provided. Contingencies including, stationary, computer consumables, report writing, local meetings, statistical analysis, unforeseen expenses would be provided at different levels.
- Mid term evaluation of Mid Term Plan strategies in 2013 and 2015 would be taken up to assess the improvement in control programme and to make any correction if required by involving experts.
- M& E cost would be provided to Regional Office for Health and FWs which are 19 in number and are functioning as eyes and ears of the central health ministry.
- M&E cost would be provided to states and districts for reviews, feedback mobility support for field visit etc.

Behaviour Change Communication - Social mobilization and information Education and Communication (IEC)

- An extensive advocacy cum action campaign would be taken up in all endemic urban and rural areas. A team called “Aedes breeding survey and control team” would be constituted in the urban wards / village panchayats. The team would comprise of ASHA, Anganwadi worker, village panchayat members, VHSC members, social workers, NGOs etc. In each urban wards / village panchayat about 12000 households would be surveyed for identifying Aedes breeding sites in and around houses. This activity would be guided by the entomologists. Trained health workers will take ASHA / Anganwadi worker and some members of the team to every house. A format would be used to collect and tabulate the potential and actual breeding sites of aedes. The output from this survey would be used in the advocacy session arranged on the same day in the ward / village telling the people about the actual situation among their households. Live larvae collected from their own households would be shown to the people. Ways of dealing with the breeding sites would be told to the people. Actual demonstration would also be done. A repeat survey would be conducted after about one or two months in the same ward / village / panchayat to find out any change. Reports received from a number of sites would be monitored to see any significant improvement in terms of reduced number of breeding sites.
• At the national level, designing/developing prototype IEC material & tool kit, video spots etc would be taken up.
• Sensitization workshops are planned at different levels.

**Inter-sectoral coordination**

• Health, Urban Development, Rural Development, Panchayati Raj, Surface Transport and Education sector would be involved.
• Task force meetings are planned at National level, State & district level
## Estimated Budget for Dengue and Chikungunya (activity and year wise)

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<th>Sl No</th>
<th>Component</th>
<th>Activity</th>
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<td>1</td>
<td>Strengthening Disease Surveillance</td>
<td>Operational Cost to Sentinel Surv Labs</td>
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<td>Operational Cost to Apex Ref Labs</td>
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<td>ELISA facility to Sentinel Surv Labs</td>
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<td>Cost of Test kits</td>
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<td></td>
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<td>IgM</td>
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<td></td>
<td></td>
<td>NS1</td>
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<td>2</td>
<td>Case management</td>
<td>strengthening Dist Hospitals for dengue case management &amp; Rehabilitation of post Chikungunya sequela</td>
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<td>Vector Control and Environmental Management</td>
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<td></td>
<td></td>
<td>200 volunteers per towns/cities &lt;40.0 lakh pop</td>
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<td>100 volunteers per Towns/cities &gt;40.0 to 10 lakh pop</td>
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<td>50 volunteers per Towns/cities &gt;10.0 to 1 lakh pop</td>
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<td>Districts for rural areas PHC/Block level</td>
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<td>Fogging machine</td>
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<td>GIS Mapping - cost of software &amp; accessories, maintenance (National)</td>
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<td>6.1 Reporting cost</td>
<td>software development for e-reporting &amp; training</td>
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<td>Cost of data card for state &amp; district level</td>
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**Rs. In Crores**
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## Abstract of Budget proposed for prevention & control of Dengue & Chikungunya

(Rs. in crores)

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2.3 Japanese encephalitis (Proposed Plan during XII Five Year Period)

2.3.1 Key lessons learnt from XI five year Plan

- Despite setting up of 51 sentinel sites hospital based surveillance centres, the actual disease burden has not been fully assessed. Though some of the states like Assam, Karnataka, Tamil Nadu, Goa and Uttar Pradesh have made efforts to make sentinel sites functional but additional inputs are required to be provided to reach close to actual disease burden.
- The case management facilities are poor in many states due to lack of infrastructural facilities and modern equipments.
- Though 111 districts have already been covered under JE vaccination, 10-14% JE sero positivity is still being reported due to poor coverage of new cohorts under Routine Immunisation.
- Persistence of AES case in the state of Uttar Pradesh due to lack of developmental activities in Gorakhpur and Basti districts. Though NIV Field Station has been setup at BRD Medical College, Gorakhpur since July 2008 however, not more than 2-4% of enterovirus has been detected in the states.
- Entomological surveillance is poor due to dismantling of entomological zones in the states.

2.3.2 Objectives during XII five year plan

- Prevention of outbreak
- Reduction in number of JE cases and mortality by 50% till 2017

Target for XII five year Plan, Indicators, Mean of verification

- Improved disease and vector surveillance by increasing sentinel sites from 51 to 75 during XII five year plan.
- Enhanced case management at district and sub district hospitals through improved facilities like setting up of ICU in high endemic districts.
- Rehabilitation of the disabled patients by setting up Rehabilitation Centres at state/district levels.
- Effective and timely vector control through improved vector surveillance by providing the requisite equipments and operational cost.
- Intensified IEC & BCC activities at field level for quick referrals to the sub district/district hospitals.
- Enhanced capacity building at state/district/block level for improved surveillance & case management.
- Inter sectoral convergence for exploring the possibility of mosquito proofing of pig sites in priority areas.

Indicators

- Incentivization of ASHA’s for helping in early referrals
- Training of Clinicians/Nurses in management of JE cases in CHCs and District Hospitals in endemic areas.
• Availability of necessary infrastructure for management of JE cases in CHC and District Hospitals in endemic areas and upgradation of ICU facilities and rehabilitation centers at district levels.
• Increasing number of JE diagnostic facilities across the country.
• Analysis of entomological and epidemiological data for epidemic outbreak prediction and timely remedial measures
• Focus on early referrals and source reduction/personal protection through IEC/BCC activities.
• Assess the impact of vaccination and guide the future strategies.
• Developing nationwide surveillance networking with data management.

Means of verification

• Incidence of CFR over the next 5 years.
• Number of outbreaks being reported
• Increased number of sentinel sites.
• Overall evaluation of impact of vaccination by an independent agency.
• Improved case management facilities in district hospitals.
• Review of training reports, pre-, & post training assessments
• Review of reporting through MIS/surveillance data for prediction of epidemic outbreaks
• Data management of JE cases on regular basis.

2.3.3 Strategies during XII five year Plan

Early Diagnosis and Prompt treatment of JE cases : Early Diagnosis and Prompt treatment of JE case through existing health care infrastructure/ hospitals etc. helps in reducing case fatality rate and would increase the credibility of improved health system in the country, it includes:

• Proper case management at district/sub district level: Prompt and effective case management would need more improved inputs and care from health care providers (medical and paramedical) and sufficient availability of drugs and equipment in treatment centres. Infrastructure of clinical Management with Standard Operating Procedure/guidelines for management of cases will be available at District/sub district level.
• Strengthening of referral services: Referral support will be made available by the state at District/sub district level to transport the seriously sick patients to the referral hospitals.
• Facility for diagnosis in all endemic districts: Surveillance and sentinel laboratories for diagnosis of JE cases will be strengthened at peripheral level (in JE endemic districts) in a phased manner.
• Management of Sequelae: Sequelae management will be done by drugs, orthopedic and rehabilitation procedures in all District/Medical College Hospitals/specialist Hospitals in JE endemic areas. The rehabilitation centre will be setup at state/district level.
• Epidemic preparedness and rapid response: A rapid response team will be constituted in all JE endemic districts to monitor the JE situation and outbreak in their areas.
Strengthening of JE surveillance

While implementing the surveillance plan during XI Five Year Plan which focused on the reporting of all suspected JE cases under AES, it has been realized that in the absence of adequate infrastructure for detection and isolation of viruses other than JE, this aspect of detection and isolation should rest with NCDC and other regional apex laboratories so that NVBDCP focuses on reporting system of suspected JE cases and strengthens the sentinel laboratories for confirmation of JE cases. R and D aspects as mentioned above would be taken up by NCDC.

Surveillance will be strengthened to detect all suspected JE and Laboratory confirmed JE cases. Private Practitioners will also be involved to report JE cases as per guidelines. For effective disease surveillance, the data collection will be uniform and regular through standard proformae. For this national guidelines will be provided to states. Following components of the surveillance need to be strengthened:

(a) **Serological surveillance:** For effective serological surveillance, following activities will be carried out:
- Strengthening of laboratory for sero–diagnosis by providing JE kits/ELISA Reader.
- Collection of samples and analysis in serology laboratory.
- Training of Technicians/Microbiologist for MAC ELISA diagnosis of suspected cases
- Establishment of 25 additional sentinel site laboratories in high endemic areas.

(b) **Entomological Surveillance**
- In the states where entomological zones are intact or under urban malaria schemes, identification and mapping of breeding sites of JE vectors will be done during transmission and non transmission season with the manpower available in NFCP units/UMS.
- Regular monitoring of vector density will be done in fixed as well as randomly selected sites.
- Screening/isolation of JE virus will be done from suspected JE vector mosquitoes and possible reservoirs.
- Entomological investigation will be carried out through trained manpower available in the district/state.

**Integrated vector control method**
- The main tool in vector control is fogging using technical malathion/pyrethrum for immediate killing of mosquitoes during an outbreak and anti-larval operations wherever feasible.
- Promoting personal protection method by using insecticides treated bed nets and curtains, wearing full sleeve clothes during evening hours etc.
- Biological control with approved biolarvicides in limited breeding areas.
Capacity building

- Capacity building & manpower development through training of Clinicians/Nurses on JE case management in all JE endemic districts and for Laboratory Technicians and Laboratory In-charge/microbiologist on diagnosis of JE cases by MAC ELISA method in all sentinel laboratories in a phased manner. Integrated training on vector borne diseases including JE will also be conducted.

Behaviour change communication (BCC)

- Involvement of Sarpanch and Gram Pradhans in rural endemic areas.
- Increasing awareness of clinical signs and symptoms amongst rural community thereby encouraging early referral of patients.
- Enhancing activities regarding safe drinking water practices.
- Insentivization of ASHA workers in the endemic village on early referral of suspected AES/JE case.
- Involvement of local prominent people for mass mobilization.
- Personal protection including segregation of pigs away from human population/mosquito proofing of pigsties etc.
- Early reporting of cases.
- Dissemination of knowledge on environmental sanitation and proper hygiene.
- Activities for prevention of JE will be included as integral part of BCC on vector borne diseases control.

Vaccination

- Vaccination in high risk areas and high risk population wherever feasible. Live attenuated JE vaccine has been imported during the year 2006 (X plan) and Govt. of India launched a JE vaccination programme for children between 1 and 15 years of age in 11 districts of 4 states (Uttar Pradesh, Karnataka, West Bengal and Assam) in 2006. In 2007, 2008, 2009 & 2010 28, 22, 29 and 21 new district have been added under campaign mode as well as Routine Immunisation against JE. **On the basis of availability of vaccine, plan for the other district is being developed by UIP along with the budget.**

Supervision and monitoring

- Supervision and Monitoring would be done through periodic reviews/reports, field visits and Web based MIS for proper monitoring for Japanese Encephalitis.
- Monitoring plan would be prepared by the state in order to ensure that activities envisaged by the states are implemented at the field level. Directorate of NVBDCP routinely monitors monthly incidence of JE and during epidemics, daily monitoring is carried out. Weekly monitoring will also be done during transmission season. Surveillance data will be collected from the states and will be analyzed to detect early warning signals (EWS) for JE outbreak. Sero-surveillance centers and vector surveillance centers existing in the state will provide the information
regularly to the Directorate of NVBDCP through State Health authorities. The team of state, centre and ROH&FW will carry out supervising activities.

2.3.4 Policy initiatives during XII Plan

- Provisions of ICU facilities at district level for better case management
- Incentivization of ASHA for disseminating information on causation and prevention of AES/JE as well as for encouraging community for early referral of sick patients.
- Setting up of rehabilitation centres at state/district level for the patients affected from JE.
- Provision of vector control equipments like fogging machines
- Increased coverage of routine immunisation in campaign districts throughout the country.
- Regular communications with State Programme Officer for improved actions towards prevention and control of Japanese Encephalitis
- For strengthening the case management facility at BRD Medical College, Gorakhpur, Government of India released an amount of `5.88 crores during 2009-10 for further strengthening the JE epidemic ward which was already constructed by the State Government and the funds provided by Government of India helped in providing additional manpower and the important equipment for making the JE epidemic ward functional. The state Govt. will be requested to sustain this case management facility.
- Continuation of JE sub-office of Regional Office for Health & Family Welfare (ROH&FW) which is manned by Public Health Specialist (II) has been established in Gorakhpur in April, 2007 to coordinate with the state/districts regarding prevention & control measures.
- Continuation of Vector Borne Disease Surveillance Unit (VBDSU) with Professor of Preventive and Social Medicine as its head at BRD Medical College, Gorakhpur for carrying out sero-epidemiological and entomological studies in the field, and for maintaining a close coordination with the district authorities for taking timely preventive measures.
- Continuation of NIV field Unit at Gorakhpur that was established on 11/7/08 with a senior level officer from NIV, Pune as its in-charge for detection and isolation of non JE viruses because Gorakhpur is located in between the centre of 7 endemic districts which has been highly affected from AES/JE cases from recent past.

2.3.5 Research and Development in vector borne diseases particularly on Japanese Encephalitis has been rather inadequate so far. There are major gaps in the present knowledge and available technology. Concerted efforts are required to be made for an effective Research and Development programme. Some of the critical areas related to JE control requiring operational research include:

1. Operational Research on various JE control interventions and their implementation such use of neem coated urea in the rice field, use of insecticides treated Bed Nets/curtains.
2. Use of impregnated bednets at pig sites
3. Vaccine coverage assessment
4. Detection and isolation of non-JE viruses
5. Coordination with referral apex laboratories for identifying other etiological agents
6. Differential diagnosis of other AES agents
7. Epidemic Preparedness and Response by developing early warning signals for prediction of JE outbreaks
8. JE Vector bionomics for planning if intervention methods.- Bionomics of JE vectors including seasonal prevalence and estimation of vector density in indoor sites such as human dwelling/cattle sheds/mixed dwelling and outdoor situations such as bushes, plantations, standing crops, sugarcane fields in standard prescribed formats to be studied.
9. Study on the efficacy of JE in the vaccinated areas and overall evaluation of impact of vaccination by an independent agency.

It is desirable that above mentioned activities would be continued on a regular basis and specific funds be earmarked for sponsored research coordinated by the programme directly for addressing key issues related to operational research. Nodal officer of NVBDCP will coordinate these activities.

2.3.6 M & E system including status of MIS, disease surveillance, its quality and utilization

Monitoring would be done through periodic reviews and monthly/weekly/daily reports and field visits etc. Web based MIS is to be developed for proper monitoring for Japanese Encephalitis.

- Strengthening of JE surveillance as per the national guidelines to be issued by NVBDCP. Surveillance of AES needs to be adopted.
- Overall evaluation of impact of vaccination by an independent agency.

2.3.7 Sustainability

- If the funds proposed during XII five year plan are made available, all out efforts will be made to sustain and maintain progress of the programme implementation.

2.3.8 Overlapping/Duplication

- Overlapping/duplication will be avoided by taking all the necessary measures and with close coordination of the states.

2.3.9 Estimated Budget

Funding Pattern for Japanese Encephalitis Control:-

National Vector Borne Disease Control Programme will have following pattern of funding:

- Grant in AID to be provided to the states for covering components under JE.
- Cost sharing between Centre and States.
- One time non-recurring central assistance in terms of ELISA Reader, Ventilator, Fogging machines and other equipment etc.
- Drugs and Malathion technical (insecticides) to be provided by the centre during outbreak.
• Fund for diagnostic kits, training and IEC to be provided by the centre on regular basis.
• JE vaccination programme has been made an integral component of Universal Immunization Programme in a phased manner using single dose JE live attenuated SA-14-14-2 vaccine.
• Rehabilitation units funded by Central Government for the first 5 years may be established in Government Medical College / district and other hospitals.
• Incentivization of ASHA’s for early referrals or suspected JE cases and for sensitizing community regarding Japanese Encephalitis.
• Establishment of ICU units in the endemic districts for better case management with central funds.

Proposed Budget of JE for XII five year Plan

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Vector Control

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Operational Research

| Total | 3.00 | 1.50 | 1.50 | 1.50 | 1.50 | 9.00 |

Monitoring & Supervision

| Total | 1.70 | 1.87 | 2.06 | 2.26 | 2.49 | 10.38 |

Rehabilitation Setup for selected endemic districts

| Total | 20.00 | 0.15 | 0.20 | 0.15 | 0.15 | 20.65 |

ICU Establishment in endemic districts

| Total | 40.86 | 0.50 | 1.00 | 1.00 | 1.00 | 44.36 |

ASHA Insentivization for sensitizing community

| Total | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.50 |

Other Charges for Training /Workshop Meeting & payment to NIV towards JE kits at Head Quarter

| Total | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 2.25 |

Total

| Total | 79.77 | 15.20 | 16.98 | 18.27 | 19.78 | 150.00 |
2.3 ELIMINATION OF LYMPHATIC FILARIASIS

2.4.1 Key Lessons Learnt

- The strategy of Annual Mass Drug Administration with single dose of DEC was revised to co-administration of single dose of DEC with Albendazole based on the recommendation of ICMR study. Massive efforts through social mobilization were made to improve the coverage of population during Mass Drug Administration which has resulted into overall coverage more than 85%. However, there are variation in actual compliance and reported coverage though the actual compliance has also improved in comparison to that of the year 2004 & 2005.

- It has been observed that the reason for low drug compliance is mainly because the community living at the risk of Lymphatic filariasis is apparently healthy without any signs & symptoms. Secondly, one worker allotted to cover 250 persons has to devote lot of time to convince people and therefore is not able to complete the target in one day. Thirdly, the honorarium for drug distribution was Rs.50/- per day which is less and needs to be increased.

- About 8 lakhs Lymphoedema patients and about 4 lakhs hydrocele cases have been line-listed. In addition, there may be some more cases as people do not reveal these manifestations at early stages because of social stigma. The affected people need continuous persuasion for lymphoedema management at home and for surgical operations of hydrocele.

- Involvement of medical professionals from all sectors including private medical practitioners, elected representatives and civil society organizations in the programme need to be strengthened. The media sensitization at local level is of utmost importance which needs to be geared up through advocacy workshops and repeated meetings.

- A software on Filaria Management Information System was developed by VCRC (ICMR), Puducherry but there is a need to test it for data entry of few states and do necessary amendments, if required. Simultaneously, the HMIS of MOH&FW has also incorporated the minimum data required on Lymphatic filariasis. The major constraint is data entry into the system to make it functional and sustain its functionality.

- Timely availability of DEC and Albendazole tablets has always been the issue for the programme implementation. Since 2010-11, these drugs have been decentralized means the states will have to procure these drugs as per the assessed technical requirement for which cash grant will be made available by GoI. DEC will have to be procured by all the LF endemic States/UTs whereas Albendazole will have to be procured by few states whose requirement cannot be met out of WHO free supply which is limited to only 300 million tablets against the requirement of 600 million tablets.
2.4.2 Objectives, Targets and Indicators

During XII plan period, the objective of Elimination of Lymphatic filariasis will be as below:

▪ To progressively reduce and ultimately interrupt the transmission of lymphatic filariasis.
▪ To augment the disability alleviation programme to reduce the sufferings of affected persons through appropriate home based morbidity management and Hydrocelectomy.

Targets, Indicators and expected outcomes

To achieve the above objectives, the targets will be:

▪ To cover all eligible population living in all (presently 250) Lymphatic filariasis endemic districts during MDA.
▪ To line list the cases of lymphoedema in all the districts and augment home based morbidity management and hydrocele operations in identified district hospitals/CHCs.

The indicators will be

▪ % of target population actually consumed Drug.
▪ Microfilaria rate in sentinel and random sites of the districts.
▪ Number of LF endemic districts with microfilaria rate less than 1%.
▪ Number of Hydrocele operations conducted out of total enlisted.
▪ % of Lymphoedema cases practising Home based management.

The expected outcome of the above indicator would be:

▪ Drug compliance of more than 80% among eligible population
▪ All LF endemic districts achieving MF rate less than 1%
▪ MDA will be stopped in 250 LF endemic district and process of elimination certification will be initiated
▪ Above 80% of line-listed hydrocele cases will be operated in 12th FYP
▪ Above 80% of line-listed Lymphoedema cases will adopt home based management of maintain simple limb hygiene.

2.4.3 Means of Verification: The verification of the performance will be done through assessment of drug compliance, microfilaria survey, monitoring of side reaction due to DEC if any and

▪ Coverage and Compliance will be verified by independent assessment by involving medical colleges and research institutions through questionnaire. In rural areas, three clusters each having 30 households (about 150 inhabitants) and one cluster of 30 households in urban area in each district will be surveyed. Thus, a total of 120 households having about 600 inmates would be covered through
interrogation including physical verification of tablets using a pre-designed and pre-tested Proforma.

- **Microfilaria Survey:** The minimum number of slides to be collected need to be ensured and selection of sentinel and spot-check sites will be done under the guidance of medical college faculty and District in-charge for prevention and control of vector borne diseases. The time of night blood survey i.e between 8.30 pm and 11.30 pm will be cross-checked by concurrent and consecutive visits. In the consecutive visits the community will be interrogated about the time of survey. All the microfilaria positive blood smears and 10% of the negative blood smears will be cross-checked by Regional offices and State Head quarter.

- **Side Reactions due to DEC:** DEC is known to cause mild side reactions such as headache, nausea, vomiting, dizziness etc. however these symptoms are self limiting and usually subside within few hours. The side reactions are usually seen in those people who harbour microfilariae. In case, these symptoms persist, they require medical attention or hospitalization which is very rare. However, such serious adverse experiences of DEC, if any, will be monitored and immediately attended by Mobile teams (Rapid Response Teams).

- **Validation for MDA stoppage:** As the target for elimination of Lymphatic filariasis is by the year 2015, the assessment of districts will be done as per WHO guidelines for MDA stoppage. These assessments will include additional round of microfilaria survey in at least 10 additional sites in each LF endemic districts. In case of confirmation of microfilaria prevalence less than 1%, the prevalence of new infection in children born after initiation of MDA (6 years age) will be assessed through Immunochromatographic test (ICT). MDA will be stopped in qualifying districts.

### 2.4.4 Strategy

The strategy for elimination of lymphatic filariasis will continue as below:

- Annual Mass Drug Administration (MDA) of single dose of DEC (Diethylcarbamazine citrate) and Albendazole for at least 5-7 years (usual life span of adult worm) to the eligible population (except pregnant women, children below 2 years of age and seriously ill persons) to interrupt transmission of the disease.
- Home based management of lymphoedema cases and up-scaling of hydrocele operations in identified CHCs/ Distt. hospitals /medical colleges.
- Capacity building for home-based management of cases with Lymphoedema.
- Strategy for MDA stoppage as per WHO guidelines will be undertaken.

### 2.4.5 Initiatives proposed

- Improvement in drug compliance during MDA by States is the issue for which intensive social mobilization has been emphasized.
- Morbidity management services (foot hygiene for lymphoedema and operations for hydrocele cases) need to be intensified.
- Monitoring & Evaluation (assessment by involving medical colleges and research institutions) have been emphasized.
- Verification of microfilaria survey prevalence and antigaenaemia test for MDA stoppage.
- Post MDA surveillance through microfilaria survey in the districts where MDA will be stopped have been included.
- Certification for elimination will be initiated as per WHO guidelines.
2.4.6 Priority

- Social Mobilization for improved drug compliance and morbidity management.
- Supporting mass drug administration and management of adverse reactions.
- Involvement of faculties from medical colleges, research institutions and Regional Directors (GoI) for monitoring and independent assessment.
- Morbidity surveys and morbidity management for all patients individually and also at community level.
- Motivating people suffering from Hydrocele to go for surgical intervention.

2.4.7 Mechanism of Involvement of NGOs/PPP/community/local self government

The BCC campaign will be implemented through four-pronged activities: advocacy workshops, inter-sectoral meetings, programme communication and monitoring and evaluation at all levels (national/state/district/urban areas/blocks/sub-centres/villages) with the objectives of:

- Enhancing awareness on lymphatic filariasis and its elimination aspects,
- Promoting attitudinal and value changes among target audiences leading to informed decisions, modified behaviour, desirable practices regarding drug consumption and home based morbidity management,
- Building support for the programme across inter-sectoral partner organizations, influential sectors of society and health care service providers (public/private) and eliciting commitment for action,
- Stimulating increased and sustained demand for quality prevention and care services,
- Ensuring availability of services

Non-Governmental Organizations (NGOs), Community Based Organisations (CBOs), Faith Based Organisations (FBOs) can play an important role in LF elimination. Therefore, these will be involved in the programme by building their capacity on various aspects of ELF programme eg. local monitoring of distribution of drug, mopping up operations for improvement in coverage and compliance. This would be achieved through their participation in intensive social mobilization and BCC campaign.

2.4.8 Modalities to improve efficiency and quality of services at primary, secondary and territory levels

Intensive supervision, capacity building during process of programme implementation through involvement of research institutions and medical colleges will be initiated at state, district and PHC level. Besides, local leaders and NGOs will be involved.

2.4.9 Monitoring and Evaluation

Monitoring & Evaluation of ELF programme covers process monitoring viz., assessment of timely implementation of activities as per calendar, assessment of coverage of drug distribution during MDA and compliance of drug (actual drug consumption) for enhancing the drug compliance, impact assessment through night

- **Formats for Data Capture:** Planning and implementation of any disease control programme depend on information support. Information is derived from data and hence the quality of information depends on how the data are collected and the nature of the “instrument” employed in the collection procedure. Therefore, formats for data capturing have been circulated to the filaria endemic states/UTs so as to collect the data in a uniform pattern. The HMIS programme for Lymphatic Filariasis is integrated under NVBDCP and ultimately in MOH&FW. With the operationalization of HMIS, the reports on ELF activities will be received at the Directorate without much lapse of time.

- **Compliance:** The issues of coverage of distribution and consumption are ideally recorded as primary data at the time of drug administration, in which case, sampling design is not required. Since consolidation of compliance data based on drug providers’ records may not be authentic, a sample survey is carried out subsequently by involving medical college faculties/research institutions/ Regional Director’s offices (GoI) to assess and validate the data. These surveys also include components relating to compliance, adverse reactions if any, and efficacy of IEC tools employed. Questionnaire surveys are carried out within a limited period of time from the date of MDA considering the memory of individual respondents, which will influence the quality of data. The sampling units are individuals who are interviewed from selected households in the identified villages in rural areas and similar households from selected wards in towns and municipal areas.

- **Impact evaluation:** This evaluation is based on the parasitological surveys in human population before and after the intervention covering certain proportion of population in selected villages / wards. Distribution of filariasis is known to be clustered and therefore selection of villages for impact assessment is done by taking representative samples from different clusters (such as low, medium and high) within a given district. Eight sites (fixed and random) are selected for each district and a minimum of 4000 persons (500 per site) are examined for microfilaria. The detailed guidelines have been provided to states/UTs.

### 2.4.10 Validation

- The districts reporting microfilaria less than 1% in sentinel and Random sites will be subjected to validation by conducting Microfilaria survey in additional 10 sites and after ensuring microfilaria rate <1%, the prevalence of current infection in children of 6 years ago will be assessed through ICT as per WHO guidelines MDA will be stopped in those districts where observance of prevalence of current infection (i.e. the for circulating antigenemia) is evidenced.

- The districts where MDA will be stopped will be kept under post MDA surveillance for 5 years. During post MDA surveillance only microfilaria survey and antigenemia survey will be conducted as per WHO guidelines.

- Based in trend and success achieved in reducing microfilaria rate, it is expected that by 2014-15, these 250 Lymphatic Filariasis endemic districts will be subjected for MDA stoppage and verification for elimination.

- The WHO revised guidelines 2010 will be circulated to all states/districts, research institutions, medical colleges, Regional offices (GoI) etc., involved in assessment and implementation.
2.4.11 Sustainability

In order to achieve the National Health Policy goal of ELF by the year 2015, adequate funds/resources need to be provided to endemic states/UTs to sustain the ELF programme. As a policy, the budget head for ELF is to be marked separately like Malaria, Kala-azar and Externally Assisted Component. The availability of allocated funds at state, district and PHC level need to be ensured as often the release of funds are dependent on availability of total balance funds under NVBDCP programme which, however, are earmarked for different activities like decentralized commodities, salary of contractual MPWs, ASHA’s incentives for malaria etc.

2.4.12 Overlapping/Duplication within or across Health Programmes; convergence issues

The programme is already integrated within umbrella of NVBDCP. The strategy of ELF includes partnership with other National Health Programmes, non-health sector departments, civil society organizations (Non-Governmental Organizations/Faith Based Organizations/ Community Based Organizations/ Panchayati Raj Institutions/Self-Help Groups), corporate sector, medical academia, professional bodies. Since, its strategy and monitoring and evaluation are different, there may not be any chance of overlapping or duplication in the field of either implementation or data capture.

2.4.13 Estimated budget (Activity and year wise) – The budget proposed has been worked out separately for various activities related to annual mass drug administration, its assessment, validation, post MDA surveillance and for disability alleviation including lymphoedema management and hydrocele operations. The details are indicated below with the year-wise and activity-wise budget break up is enclosed

- **Preparatory activities** for mass drug administration includes various sensitization meetings, trainings of various categories, intensive IEC/BCC activities, monitoring and evaluation including mobility support for field supervision and movement of rapid response team. The budget for various sensitization meetings at national, state and district level has been provisioned @ Rs.3.95 crores per year amounting to total requirement of Rs.19.75 crore for XII FYP.

- **IEC/BCC activities** are the most crucial in improving the acceptance of the drug during MDA as most of the people apparently look healthy even if they are infected. The fund of Rs.10 lakh per district per year has been provisioned with 10% of it to be allocated for the state level activities. This amounts to be Rs.27.50 crore per annum (Rs.137.50 crores for XII FYP). This is about 19% of total ELF budget proposed during the plan period.

- **Capacity Building** – Specific orientation and training are required for medical, paramedicals, Lab.Techanician for microfilaria survey and drug distributors at various levels. Accordingly the funds have been provisioned at state, district and PHC levels. The required funds per annum will be Rs. 27 crore and total for 12th FYP will be Rs. 135 crore.

- **Lymphoedema management** – The persons showing manifestations of different grades are required to maintain hygiene for which they need to be demonstrated the simple foot hygiene method. Rs. 150/- per patient per year
has been provisioned which will include one morbidity management kit comprising of one mug or small bucket, one soap, small towel and anti-bacterial or anti-fungal cream. Budget has been provisioned @ Rs.11.80 crores per year amounting to total requirement of Rs.59 crore for XII FYP.

- **Hydrocele operations** – The listed hydrocele cases are to be motivated for surgical operation for which Rs. 1250/ per person incentive of Rs.500 to surgeon, Rs.100 to staff nurse, Rs.50 to ward boy, Rs.50 to attendant, Rs.400 for medicines etc. and Rs.150 towards transport charges to patient have been provisioned. In 5 year plan period, all hydrocele have been targeted @ 20% operation per year. Budget has been provisioned @ Rs.9.80 crores per year amounting to total requirement of Rs.49 crore for XII FYP.

- **Impact of MDA on Microfilaria prevalence** - To analyse the impact of annual Mass Drug Administration towards interruption of transmission, the prevalence of microfilaria in sampled population as per guidelines is assessed through night blood survey in 8 sites of every MDA covered district as an inbuilt mechanism of monitoring the performance. This activity is most crucial and is being done since 2004 and will be continued till the MDA is stopped. The funds earmarked for this activity is Rs.6.5 crore for XII FYP.

- **Honorarium rates** – The drug distributors including ASHAs involved during Mass Drug Administration are to cover 250 persons or 50 houses during MDA on single day with mopping up for 2 subsequent days. The rate of honorarium per day is Rs.100 per person. This works out to be Rs.48 crore in first year, Rs. 27 crore in second year, Rs.16 crore in third crore, Rs.14 crore in fourth year and Rs.13 crore in fifth year (Total Rs.118 Crore). The MDA is expected to be stopped in phased manner on yearly basis, therefore the funds provisioned for honorarium has also been reduced. In addition to these volunteers, the honorarium for supervisory staff (1 per 10 drug distributors) has also been provisioned at the rate of Rs. 4.82 crore per annum which works out to be Rs. **24.10 crore** for plan period.

- **Contingency** – to meet the contingent expenditure at different level, it is proposed to provide Rs.2 lakhs per district for 250 LF endemic districts which amounts to be Rs. 5 crore per annum (total Rs.25 crores for XII FYP).

- **Mobility** – the fund for mobility support is being provided at the rate of Rs.80,000 per district to facilitate the movement of local officials, transportation of drugs, movement rapid response team in case of emergent situation and monitoring and supervision of the programme during the Mass Drug Administration. 10% of the total amount allocated in this Head is earmarked for state headquarter to facilitate their movement to the districts for supervision during MDA. Budget has been provisioned @ Rs.2.20 crores per year amounting to total requirement of Rs.11 crore for XII FYP.

- **Independent assessment** through experts from ICMR, ROHFW, Medical Colleges on coverage and compliance - To carry out these activities by Research institutions/ medical colleges/ Regional offices, funds have been provisioned @ Rs. 15000/- per district ( TA for 2 persons @ Rs. 2000 each; Honorarium for 2 persons @ Rs. 1000/- per person per day for 4 days); contingency Rs. 1000/- and POL Rs. 2000/-). Budget has been provisioned @ Rs.9 crores per year amounting to total requirement of Rs.45 crore for XII FYP. ‘ 45000 per districts is kept for outside experts for Research Institute and ‘ 3 lakhs for undertaking training, sensitization of PHC Medical Officers of districts and compilation of report etc.

- **Verification and validation for stoppage of MDA in LF endemic districts by conducting mf survey/ICT survey through experts from ICMR, ROHFW, Medical Colleges and University** –
This activity is very crucial to verify and validate the data on prevalence of microfilaria. The additional mf survey through night blood survey in 10 sites of identified districts will be done and Rs. 70000/- per district has been provisioned to meet the travel cost of 3-4 local technicians/assistants/health workers, their honorarium, cost of 5000 slides, pricking needles, cotton spirit etc. and honorarium for examination of 5000 slides. Budget has been provisioned in a phased manner amounting to total requirement of Rs.1.93 crore for XII FYP.

Further, districts are to be screened through ICT for presence of circulating antigenemia in children (presence of adult worm as evidence of current infection) to initiate MDA stoppage. For this activity, funds have been provisioned @ Rs. 1.5 Lakhs per district in a phased manner which amounts to a total of Rs. 4.57 crore for XII FYP.

The cost of ICT Cards have also been considered to be procured through WHO for the above mentioned activity which works out to be Rs.11.49 crore.

The total budget worked out for the verification and validation for stoppage of MDA is Rs.17.99 crore for XII FYP.

- **Verification of LF endemicity in non-endemic districts** - As During 12th Plan period, the WHO will be requested for initiating process of certification of elimination, the districts reported to be non-endemic for Lymphatic Filariasis (other than 250 districts covered under MDA) will have to be surveyed for infection of Lymphatic Filariasis through microfilaria and antigenemia survey by involving ICMR, NCDC, ROH&FW and states. Such activity has been strongly recommended by experts of sub-group and accordingly budget has been provisioned.
  - Out of 640 districts, 250 districts are known LF endemic which are covered under MDA; 65 districts have already been surveyed and found to be very low endemic/ non-endemic. Remaining 325 districts will be surveyed first for presence of Lymphoedema & Hydrocele cases in the villages by involving ASHAs or health workers. Rs.100 has been provisioned per worker as incentive to enlist the persons having Lymphoedema or hydrocele manifestation in their village and send it to PHC. The fund provisioned for this activity is Rs.4.5 crore. This activity is to be completed within 3 years.
  - Though these districts are reportedly non-endemic but the presence of Lymphoedema & Hydrocele cases will necessitate the survey for prevalence of microfilaria through night blood survey for which Rs.195 crores has been provisioned. This activity is expected to be completed within 3-4 years.
  - The presence of infection in children is the indicator of current infection for which the test through ICT cards is to be done for which provision of Rs.9.8 crore at the rate of Rs.1.96 crore per year has been kept.

- **Post MDA Surveillance** - The districts covered under MDA will be subjected to the process validation and verification and MDA will be stopped in the districts fulfilling the criteria for MDA stoppage as per WHO guidelines. Such districts are to be kept under Post-MDA surveillance as per WHO guidelines through night blood survey for microfilaria and in presence of adult worm in children through ICT to ensure that no new cases occur so that process of certification of elimination is initiated. Funds of Rs.6.75 crore have also been provisioned for the activity.
• **DEC & Albendazole** - DEC and Albendazole requirement is expected to be reduced in subsequent years as the districts march towards MDA stoppage. Albendazole is supplied partially by WHO and based on present trend of Mf rate, it is expected that after 2 years, the requirement of Albendazole can be managed out of WHO supply. The funds have been provisioned accordingly. The total fund of Rs. 76.40 crore for DEC and Albendazole has been reflected during XII FYP.

**Estimated Budget for ELF (activity and yearwise)**

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<tr>
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**Abstract of Budget proposed for Elimination of Lymphatic Filariasis**

(Rs. in crores)

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2.4 KALA-AZAR ELIMINATION PROGRAMME

2.5.1 Key Lessons learnt from the XI Five Year Plan

- Inadequate ownership and commitment by the states.
- Poor programme implementation at grassroots level.
- Ongoing efforts are not sustained and the kala-azar incidence is showing increasing trend.
- Poor quality and coverage of Indoor insecticidal spray for vector control.
- Due to prolonged injection based treatment, some of the cases did not complete the full treatment.
- Absence of tracking mechanism to follow up defaulter patients.
- Moreover, there remained some untraced or untreated cases which act as parasitic reservoir.
- Presence of Post Kala-azar Dermal Leishmaniasis (PKDL) cases which also act as active source of Kala-azar transmission.
- Inadequate monitoring & supervision.

2.5.2 Objectives:

- To Achieve Elimination of Kala-azar from the country by 2015

Target

- To reduce the annual incidence of Kala-azar to less than one per 10,000 population at the block level by 2015.

Indicators:

- No. of Kala-azar cases per 10,000 Population at block level
- Kala Azar Case fatality rate
- Treatment compliance rate

2.5.3 Strategy:

- Parasite elimination and disease management
  - Early case detection and complete treatment,
  - strengthening of referral;
- Integrated vector control
  - Indoor Residual Spraying (IRS),
  - environmental management by maintenance of sanitation and hygiene,

- Supportive interventions
  - Behaviour Change Communication for social mobilization,
  - Inter-sectoral convergence,
  - Capacity building by training and Monitoring and Evaluation.

Initiatives

The following initiatives would be undertaken:

Surveillance and Case Management

- Strengthen case search for hot spots: Case search on quarterly basis shall be undertaken in all the sub-centre covering the hot spots.
- Upscaling of RDT & Oral drug for early detection and complete treatment: To improve treatment compliance a new oral drug Miltefosine would be expanded to all the kala-azar endemic districts as the first line of treatment.
- The use of oral drug –miltefsoine shall be expanded to all the kala-azar endemic districts as first line of treatment.
- Mechanism for Directly Observed Treatment: The treatment with Miltefosine would be taken up on the DOTS pattern as a supervised treatment with patient coding system being followed for each patient registered at the treatment centre.
- ASHA would be trained and fully involved to ensure complete treatment compliance.
- The provision for the incentive to ASHA has been increased from Rs. 100/- to Rs. 200/- (Rs. 50/- to refer a suspected case to the nearest PHC and Rs. 150/- for ensuring the complete treatment)

**Patient coding scheme** will facilitate the tracking of all patients of kala-azar down to the village and individual household level with greatly improved default retrieval.

- The use of Treatment Cards and Master Kala-azar Patient Register will be ensured for proper line listing of all cases and for proper follow up visits.
- To allow a rapid and easy diagnosis of Kala-azar rK39 rapid diagnostic test kits for its use at the grassroot level.
- The use of Miltefosine and rapid diagnostic test kits are expected to greatly improve case detection particularly the passive case detection. However, initiatives will be taken to improve **active case detection** by increasing the frequency of door to door visit by observing the Kala-azar fortnight every quarter i.e four times in a year and also through camp approach. Volunteers would be drawn from organizations like Nehru Yuva Kendra, NCC etc. to intensify the case searches including the PKDL cases. These volunteers would be provided necessary orientation.
- Monitoring of diagnosis and treatment will be accelerated by frequent visits by programme personnel as well as by proposed coordinators.
- Training & IEC/BCC
- Monitoring & Supervision

**Vector Management**

- Indoor residual spraying (IRS) for interruption of transmission will be taken up in all the 52 endemic districts of the country to ensure good quality spray and coverage above 80 % coverage.
- Monitoring of the process and impact of indoor residual spraying would be stepped out through independent studies on the effect of spraying on vector populations and susceptibility studies.
- Environment sanitation will be given considerable importance in a BCC campaign to eliminate the breeding sites of the vector species.
- Initiatives are underway for the provision of alternative housing sites to the poor and marginalized population in the Kala-azar villages, who are the most common victims of disease, under the Indira Vikas Yojna.
- Necessary modules will also be developed for capacity building at various levels to strengthen skills for programme implementation.

### 2.5.4 Mechanisms of involvement of NGO/Private sector/ community/local self government in implementation and monitoring programme

- Networking with NGOs and Private Sector will be taken up more thoroughly during the plan period.
Reporting formats will be communicated to all the major private practitioners and NGOs who are treating Kala-azar cases.

Linkages will also be established with all the NGOs and Faith Based Organisations.

The media plans and media kits will be developed for vigorous BCC campaigns to involve community in treatment and vector control.

2.5.5 Priority areas for basic, clinical, applied and operational research

The following areas are priority areas for applied and operational research.

- Pharmaco-vigilance on the use of Miltefosine as the first line of treatment.
- The operational use of RDK for kala-azar and its quality assurance.
- The use of alternative methods of rapid diagnosis.
- The operational research on the treatment of PKDL.
- The development of guidelines on the treatment of PKDL.
- Intensive studies on vector bionomics and the impact of insecticide spraying and susceptibility of Kala-azar vectors.

2.5.6 Modalities to improve efficiency & quality of services

Effective strategy implementation through:

- Strengthened passive surveillance
- Intensification of Active case detection in hot spots.
- Declaring Kala-azar a notifiable disease
- Standard treatment protocol compliance and follow up through treatment cards and DOTs
- Effective DDT spray under close supervision
- Effective IEC campaign to for community mobilization
- Efficient manpower development through trainings
- Networking with other health care service providers in public/private sector
- Linkages with other national health programmes like NLEP/NACP/RNTCP etc. for case search & IEC.
- In addition to the above, the Coordinator will be engaged at the rate of one Coordinator per district for all the 52 Kala-azar endemic districts on contractual basis.
- This provision has been made for mobility support of these district coordinators for supervision and monitoring of the programme.

2.5.7 M & E system including status of MIS, Disease surveillance, its quality & utilization

- Data on number of cases & deaths to be received timely.
- State/districts asked to provide age & gender wise information up to sub-centre wise.
- For line listing of kala-azar cases, new coding scheme is being introduced to avoid duplication and overlapping.
- Proper monitoring & analysis of data at sub-centre/PHC/district level envisaged.
- Ensure regular monitoring & reporting of spray completion reports.

2.5.8 Programme Sustainability depends upon:

- Priority to the Kala-azar problem at all levels of programme implementation.
- Strengthening of infrastructure.
- Required funds in place in time.
- Availability of drugs, insecticides, equipment, vehicles, etc.
- Ensure timely and effective spray coverage.
- Regular monitoring and evaluation

2.5.9 Overlapping/duplication within or across health programme; convergence issues

- Presence of different institutes for same cause i.e. ICMR, NICD, Medical College, RD office.
- There is no coordination among these on their functioning on kala-azar or implementation.
- Functioning of state health directorate and state health society (NHRM).
- Functioning of MPHW, ANM, ASHA & Anganwadi Worker, NGOs.
- Functioning of private & public practitioners.

2.5.10 Proposed Estimated Budgetary Outlay for Vector Borne Disease Control Programme (Kala-azar) for XI Five Year Plan:
The activity-wise and year-wise break up of proposed funds for elimination of kala-azar is indicated below:

### Estimated Budgetary Outlay for Kala-azar for XII Five Year Plan (Rs. in crores)

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<td>Spray pumps &amp; accessories</td>
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<td><strong>133.77</strong></td>
<td><strong>128.71</strong></td>
<td><strong>700.66</strong></td>
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2.6 Cross cutting Issues (inclusive of special focus and additional inputs during XII Plan):

In view of lessons learnt during XI Five Year Plan and challenges encountered, it has been felt that special focus has to be given to some of the vital components and additional inputs for supporting engagement of key technical manpower need to be provided for effective implementation, supervision, improving monitoring and evaluation and reporting. Further, it has also been observed that due to inadequate /non- availability of funds for procurement of decentralized insecticides and operational cost for IRS, the coverage of IRS which is a key vector contril measure, has not been achieved at the desired level. This necessitates that during XII Plan period, this component should be fully supported by the Central Government. The component wise details are as follows:

2.6.1 Human resource:

ASHAs:

- ASHAs are the important vehicle for implementation of national programmes at field level. This is especially true for NVBDCP where in the field surveillance is an important component of EDCT. Presently ASHAs are involved in the diagnosis and treatment of malaria cases and bringing the Kala Azar cases to the health facilities. ASHAs perform rapid diagnostics test, prepare slides and give treatment to malaria positive cases. ASHAs are given incentive for each of these activities like Rs. 5 per RDT and slide preparation, Rs. 20 per complete treatment for Pf cases and Rs. 50 for radical treatment of Pv malaria. Presently, NVBDCP is giving such incentive to ASHAs in 257 identified high risk districts which mainly comprise of the World Bank and Global Fund supported project areas. The programme proposes in the 12th plan to extend the incentive to all ASHA in all the districts for catering services for all the six VBDs depending upon their endemicity in the area served by the ASHAs. More than 6 lakh existing ASHAs will be involved throughout the country. The programme has earmarked Rs. 250 per ASHA per month with an overall ceiling of Rs. 3000 annually for this. It is expected that this incentive will greatly help in increased surveillance of all the six VBDs under the programme for taking timely corrective actions.

MPW (M):

- As against the requirement of 145894 MPWs (as per NRHM data 2009 RHS) are 79774 and in place are 57439. Thus there is a vacancy of 26208 MPWs. But considering the total requirement as per the population norms, there is an actual shortfall of 88483 MPWs. Recently, the union government has proposed to revitalize MPW training centers in the states, so as to make available adequate number of MPWs for the field work. NRHM may initiate steps to recruit and train such numbers in the 12th plan period. MPWs are essential for NVBDCP as they are the health workers (besides ASHA) who are responsible for field surveillance and constitute an integral part of EDCT. Success of the programme depends heavily on them. Effective field workforce
will greatly help the programme in achieving the desired outcomes. NVBDCP has recruited 9956 MPWs contractually in the XIth Plan period in the high endemic states supported by World Bank and Global fund and proposes to continue with these contractual MPWs till regular appointees join the programme or the existing contractual workers are absorbed in the health services of the respective states.

**Laboratory Technicians:**
- There are presently 12904 LTs in place as against the sanctioned strength of 17219 leaving a vacancy of 5591 (NRHM data 2009, RHS). However NRHM has calculated the LT requirement as 27901, based on the provision for one LT each for PHC/CHC taking into account the shortfall in existing PHCs/CHCs. Therefore, the actual shortfall is of 15244 LTs (@ one LT for a population of 40,000). Out of this shortfall, nearly 20% has been filled by contractual LTs recruited under RNTCP, NACP III etc.; thus having a present vacancy of nearly 12,195 LTs. As microscopy is still gold standard for Malaria diagnosis and crucial for EDCT, therefore the programme programme proposes to recruit these 12,000 LTs with a provision for binocular microscope for quality diagnosis and treatment.

**VBD Technical Supervisors (Like MTS/KTS):**
- NVBDCP has started an innovation for effective monitoring and evaluation of the malaria and Kala Azar in the form of Malaria and KA technical supervisors in the high endemic areas in the project states. This has paid rich dividends as these TSs have proved a very effective tool for supervision and M&E of programme implementation, and management of logistics and drug supply as well as tracking of cases at block/field level. Encouraged by the outcomes, NVBDCP plans to expand this and proposes to recruit one Vector Borne diseases Technical Supervisors in all the blocks of the country (one for each block) for looking after the VB disease(s) in their area.

**District VBD Consultants:**
- Like the MTS/KTS in the high endemic blocks, NVBDCP has recruited District VBD Consultants in the high endemic districts of the WB/GF project states. This has improved M&E and the programme implementation aspects. Therefore, NVBDCP has planned to expand the DVBC network to all the 640 districts in the country (one for each district). They will be assisting the District Programme Officers who, at times, are over burdened with various other duties and are not able to devote adequate time to VBDs. They will be provided with support for mobility and operational expenses. In addition, it is planned that each district will have one Data Entry Operator to facilitate the recording and reporting of the programme.

**State Level Consultants:**
- In order to strengthen M&E activities and supervision of implementation aspect of the programme at the state level additional support is required in the form of contractual consultants for various functional areas and they will be qualified experts in their field. They will be provided mobility and operational support. Like the District VBDC, they will assist the state programme officers.
at the state level. Each state will have one M&E consultant (Medical graduates with Public Health qualification), one VBD consultant (preferably entomologist) and one Finance and logistics consultant. The project states already have such consultants working and the plan is to further extend them at each State. In addition to this, one Data entry operator shall also be provided at each state HQ to facilitate the recording and reporting of the programme.

**Strengthening of ROHFW**

- At present, there are 19 Regional offices (RDs office) in the country, many of which are facing acute shortage of skilled manpower. RD offices perform the function of monitoring the programme as well as liaison between the Directorate and State Programme Offices besides training and other activities. NVBDCP is of the opinion that RD offices need strengthening and accordingly, it is proposed to have one entomologist and one epidemiologist (with medical background) at each of these regional offices with mobility and operational support.

**Strengthening of Zonal Entomology Units:**

- During the 12th five Plan, the NVBDCP proposes to revive and reactivate the 72 zonal entomological units currently spread all over the country with an adequate budget provision. It is, proposed that support for filling up 37 vacant posts of entomologist and 65 vacant posts of insect collectors will be provided by the central Government Assistance will also provided for mobility, equipments etc., so that adequate data on various entomological aspects is generated on a regular basis. Provision of training of newly recruited entomologists will be made. It is projected that Rs. 93.3 crore will be required for this component during 12th Five Year Plan.

**2.6.2 Capacity building:**

Capacity building is an ongoing activity undertaken by NVBDCP regularly to build the technical and managerial capacity of the staff to improve overall programme implementation.

For cascading on training Medical Colleges will be involved through NIHFW for preparing of training resource pool up to district level. This resource pool will be shared with NRHM, so that during imparting of integrated training with appropriate faculties for VBD can be drawn from this resource pool.

During XII Plan large numbers of technical manpower are to be engaged, therefore, adequate budget provision for training and reorientation of these manpower has been kept.

The categories of manpower to be trained are Community volunteers (ASHAs, AWW, FBOs, NGO, CBOs), MPWs( Male and Female), Lab technician, MO(PHC), Physicinas, Dist. VBD Consultants, VBD technical supervisors, etc. Few special training programmes i.e. malariology and entomology trainings will also be conducted for State Programme Officers and District Programme Officers.
2.6.3 BCC and Social Mobilization:

- IEC/ BCC is one of the core activities of the programme. The support for these activities has been provided through DBS as well as from EAC. For effective development of IEC and BCC tools and implementation activities agencies have been hired under WB supported project which mainly focuses to the project areas. Under GF supported project, the IEC/BCC activities are being carried out with the partner Civil Society/ NGOs. Under the WB project there is no cash provision to the States which hampers execution of IEC activities at grassroot level. Under DBS, a meager amount is provisioned doe IEC/BCC. While under the WB project a greater chunk of IEC budget is allocated to the agencies for execution of task.
- There is no IEC/BCC support unit at the Directorate for taking up these important tasks. Under the XII Plan, the programme proposes to establish an IEC/BCC division with communication experts and support media staff. This has been reflected under restructuring of NVBDCP.
- Adequate funds have been provisioned for the states to carry out approved and on-going IEC/BCC activities under the programme.

2.6.4 Public Private Partnerships (PPP):

- For promoting partnerships with private sectors, NGOs, FBOs, CBOs and local self Governments, the NVBDCP has developed six schemes on PPP during the XI Plan period. These schemes have been reviewed revised and already hosted at the website of NVBDCP. However, a separate budget has not been provisioned in XI Plan period due to cut in budget of NVBDCP at the time for final allocation. Therefore, the states have not been able to get the fund for implementation of these schemes.
- During XII Plan period, a separate budget is proposed for its implementation to facilitate building partnerships.
- Establishing IEC/BCC Cell at Dte. NVBDCP with regular communication expert supported with media assistants.
- Development of strategy specific prototype materials and Healthy Public Policy through hiring an agency.
- IEC/BCC activities through print and electronic media at national, state and regional level
- Strengthening of IEC/BCC activities at grass root level through Inter-personal communication, folk media etc. for social mobilization towards acceptability of services provided under programme.
- Special campaigns during Spray, distribution of LLINs and anti- malaria month
- Strengthening of service delivery through Vulnerable community plan for marginalized sectors

7. Public Private Partnership(PPP) & Inter-sectoral convergence

- Improving outreach services through partnership with Non-Governmental Organizations (NGOs), Faith Based Organizations (FBOs), Community Based Organizations (CBOs) and Local self-government (Panchayat)
- Implementation of Existing 6 PPP Schemes of NVBDCP by earmarking separate budget.
• Flagging the issue of Inter-sectoral convergence through planning commission to various Ministries like Agriculture, Urban Development, Education, Information and broadcasting, Tribal and Social welfare, Railway, Surface transport, civil aviation, Port Health Authorities and Textiles etc to ensure support and incorporation of Health Impact Assessment component in the projects under respective ministries.

State level Annual Inter-sectoral meeting and districts level quarterly meeting for sensitization.

2.6.5 Monitoring & Evaluation:

Monitoring and Evaluation for Prevention and control of VBDs.

A robust programme management and monitoring system will be implemented to monitor progress towards targets and objectives and provide continuous feedback to strengthen and improve delivery mechanisms at all level. To strengthen the monitoring and evaluation function for prevention and control of vector borne diseases, the NVBDCP will continue and adopt the following strategic activities under the programme:

• Existing NAMMIS will be made fully functional by replacing all old computers, providing internet facility and positioning of data managers at District level.
• Further a comprehensive web-based reporting system will be developed inclusive of all VBDs by up-grading NAMMIS to NAMMIS Plus.
• Monitoring of drug and insecticide resistance by involving NIMR, ICMR, ROHFW and Medical Colleges.
• Establishing Sentinel Surveillance Sites (SSS) at the districts and prominent hospitals to monitor the trends of disease morbidity and mortality.
• Periodic review and programme /project evaluation at various levels with appropriate periodic intervals and taking necessary corrective actions based on the review.
• Supervisory field visits by Officers from NVBDCP, ROH&FW, State level officers and consultants hired under the programme /projects to supervise the implementation of programme /project activities at the field level.
• Improving the reporting system with the use of computer/laptop /palmtop and communication systems like data-card, internet, mobile, telephone etc.
• Making available monitoring consultants at national, State and district level, VBD Technical supervisors at block level and data entry staff at various level for ensuring timely recording and reporting system and improving the monitoring and supervision at various levels.
• Training of the staff for correct use of recording and reporting formats
• Use of Lot Quality Assurance Sampling (LQAS) methodology at sub-district level for monitoring the implementation of programme and project activities
• Periodic evaluation of the programme and project activities as defined, by hiring external agencies for doing external evaluation.
• Internal evaluation will be done by periodic review meetings held at State and national level.
• Hiring of independent agency for monitoring the logistic and supply chain management.
• Hiring of independent agency at national level for monitoring and supervision activities.

2.6.6 Logistics and supply

Large numbers of commodities i.e anti malarial drugs & other drugs for vector borne diseases, insecticides, larvicides, Rapid diagnostic kits for Malaria and Kala Azar, Long lasting Insecticide treated nets (LLINs) are being procured through agencies engaged EPW of MOHFW. However, there is no regular procurement specialist in the Directorate. At present procurement consultants hired under EAC are assisting. In view of intense and timely procurement and its supply up to the grassroot level user facilities for managing seasonal diseases is a challenge. Some of the diagnostics and drugs are short expiry and their monitoring becomes extremely important through a mechanism of supply chain monitoring. At present a supply chain monitoring agency has been hired under WB supported project. This component has to be sustained through domestic budget.

The quality control of all commodities during pre and post supply are to be ensured, so as to ascertain good quality of commodities.

During XII FYP, the existing norms of commodity support will continue. The centralized and decentralized items are mentioned below:

• **Centralized procurement under NVBDCP:** ACT Combi Pack (Tab. Artesunate + Tab. Sulphadoxine Pyremethamine) (for different age group), Injections Arteether 150 mg, Rapid Diagnostic Test Kits for Malaria and Kala-Azar, Synthetic Pyrethroid (wdp) for project areas, Long Lasting Insecticidal Bednets (LLIN), DDT for Malaria and Capsule Miltefosine

• **Decentralized Procurement:** GoI is providing cash assistance in the form of Grant-in-aid for procurement of Tabs. Chloroquine, Primaquine, Quinine, DEC, Albendazole, Inj. Quinine, NS-1 Antigen kit for Dengue, larvicide (Temephos).

• **Decentralized items:** The items like malathion 25%, Synthetic Pyrethroid (wdp), larvicide other than temephos, lab reagents, etc. are decentralized items to be procured by the State funds.

Due to lack of procurement capacity, many states could not take up the procurement process for the items under decentralized procurement and cash assistance has not been utilized. During XII plan the states will be urged to enhance their procurement capacity.

Under the 12th Five Year Plan, the NVBDCP proposes to continue the existing procurement policies. The inputs currently supported from the externally aided projects (WB and GF), will be supported from the domestic budget, after the end of the projects for sustaining the gains and achievements beyond the project periods.
2.6.7 Restructuring Directorate of NVBDCP

The Directorate is the nodal agency for making policy, programme evaluation and technical advice on the vector borne diseases. Accordingly, it requires adequate manpower for effective functioning. The structure of Directorate of NVBDCP was conceived with the focus on malaria only. However, over the years, five more VBDs have been added without adequate support in terms of human resource. Out of these six diseases, four diseases are outbreak prone and warrant intensive regular monitoring and immediate technical support to the states for containment of outbreaks. Remaining two diseases are targeted for elimination which requires intense monitoring and evaluation. Over the years, the budget for the NVBDCP has been enhanced and large number of commodities and services are to be provided. Due to the increased programme activities and large volume of financial and procurement matters, the legal issues are also to be dealt. The volume of work towards monitoring and evaluation at Directorate NVBDCP has increased to a great extent which require officials to visit to the states, to examine, analyze the data and provide feedback to the states.

In view of these circumstances, a sustainable system strengthening on technical and other related matters (finance, procurement, legal etc.) has to be built up within the Directorate of NVBDCP which necessitates the restructuring of NVBDCP with additional human resource. The existing strength of NVBDCP includes 6 public health specialist including Director, 2 medical professionals of GDO cadre including Additional Director, 11 non-medical scientist including 10 entomologist 1 toxicologist, one administrative and accounts officer. Besides, there are 3 posts of statistical officer for assessment on deputation from statistical services. The restructuring of Directorate would require additional Human Resource as detailed below.

- The existing posts of Director and Additional Director would continue.
- A total of 13 Public Health Specialists excluding the post of Director will be required of which 5 post are already sanctioned resulting into a gap of 8 post which need to be bridged.
- A total of 2 Medical Officer (GDO Cadre) excluding Additional Director would be required of which one post is already sanctioned. One more post is required.
- A total of 19 entomologists would be required of which 11 post are already sanctioned. Eight more post are required.
- At present there is only one post of Account officer (Group B) is sanctioned, it is proposed that that a Joint Director Level post for finance and budget along with 2 account officer (one already sanctioned) need to be deployed. Two more post are required.
- At present there is no logistic specialist officer and it is proposed that that a Joint Director Level post for logistic specialist along with 1 officer need to be deployed.
- At present there is no IEC / BCC cell, it is proposed that an IEC / BCC cell need to be created with one Joint Director level communication specialist supported with 2 media officers.
- At present only one Administrative officer (Group B) is sanctioned, it is proposed that a Joint Director Level Administrative officer supported with Administrative officer needs to be deployed. One more post is required.
All divisions need to be supported with appropriate number of consultant with specialization in their field. At present 27 consultant post are sanctioned and 9 more consultants are required.

Accordingly the details has been worked out and indicated in table below:

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## 2.6.8 PROPOSED BUDGET FOR CROSS CUTTING ISSUES

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# Proposed NVBDCP Budget For 12th Plan

( Rs. in Crore)

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