

CHAPTER III : PERFORMANCE REVIEWS

HEALTH AND FAMILY WELFARE DEPARTMENT

3.1 National Vector Borne Disease Control Programme

National Anti-Malaria Programme, renamed as National Vector Borne Disease Control Programme (NVBDGP) during 2003, was one of the stand alone disease control programmes brought under the National Rural Health Mission with effect from April 2005. A performance review of implementation of the programme revealed that while in one district, there was some improvement in both the Annual Parasite Incidence (API) and death cases due to malaria during 2007 compared to the previous year, there was an increase in the incidence of malaria cases and deaths due to malaria in the four other districts selected for detailed scrutiny.

Highlights

The API and death cases due to malaria increased by 86 per cent and 524 per cent respectively during 2007 over 2003, despite an expenditure of Rs. 23.70 crore during the period.

(Paragraph 3.1.10.1)

Collection of blood samples of 12.41 lakh people with the utilisation of 5,17,700 micro-slides and 39,200 pricking needles by using these more than once could adversely affect the health of the people.

(Paragraph 3.1.10.2)

Shortfall in coverage of targeted population under spraying operations led to increase in API and malarial deaths during 2003-07.

(Paragraph 3.1.10.3)

Quality of spraying operations remained questionable because of non-availability of vehicles required for the purpose.

(Paragraph 3.1.10.5)

In the absence of proper infrastructure in the Entomological Cell, entomological observations and other activities of the Cell largely remained dormant, leading to considerable increase in the incidence of malaria.

(Paragraph 3.1.10.7)

3.1.1 Introduction

The National Malaria Eradication Programme (NMEP) was introduced throughout the country in 1958 as a Centrally Sponsored Scheme to control and eradicate the incidence of malaria. The NMEP was renamed (1999) as the National Anti Malaria Programme (NAMP) and subsequently (2004) as the National Vector Borne Disease Control Programme (NVBDCP). All the vector borne diseases, viz., Malaria, Filariasis, Kala-azar, Japanese Encephalitis and Dengue were brought under the ambit of this programme. When the National Rural Health Mission (NRHM) was launched in April 2005, the NVBDCP was also brought under it.

Malaria has been a major public health problem in India and Meghalaya is among the States, where the number of cases reported is very high, compared to the size of the population in the State. Therefore, in respect of Meghalaya, only the activities under “Malaria” were undertaken as part of implementation of NRHM, since there was no incidence of other vector borne diseases in the State as reported by the programme implementing authority concerned.

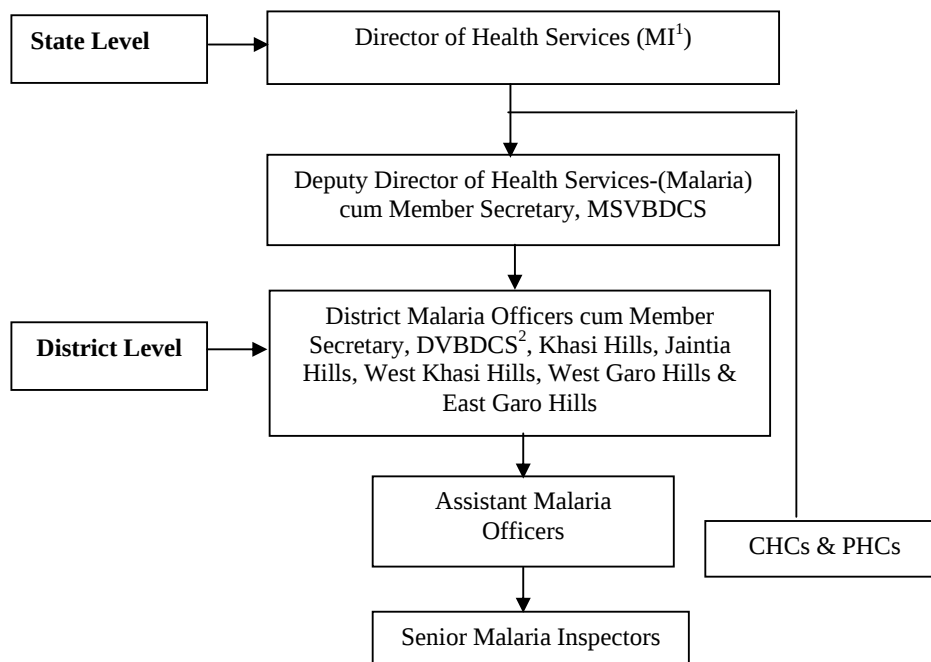
The objectives of the NVBDCP were to reduce (i) the incidence of malaria, (ii) malaria mortality rate by 50 *per cent* by 2010 and (iii) malaria morbidity to 30 *per cent* by 2010.

The guidelines of NRHM prescribed the following strategies to achieve the objectives of the programme:

- Increase Annual Blood Examination Rate to 10 *per cent* of the target population under surveillance;
- Indoor residual spray of insecticides;
- Free distribution of insecticides treated bed nets to below poverty line families; and,
- Establish Drug Distribution Centre/Fever Treatment Depot in each village in high-risk areas.

3.1.2 Organisational set up

The Principal Secretary/Commissioner and Secretary of Health & Family Welfare Department is responsible for overseeing the implementation of the programme. The State Malaria Control Society and Meghalaya State Vector Borne Diseases Control Society (MSVBDCS) were constituted in July 2002 and March 2005 respectively, by the State Government for prevention and control of malaria and other vector borne diseases in the State. The organisational structure for implementation of the programme in the State is detailed below:

Chart 3.1

3.1.3 Scope of Audit

Performance review of the NVBDCP covering the period 2003-08 was conducted (August - September 2008) through a test check of the records of the Director of Health Services (DHS)(MI), Deputy Director of Health Services (DDHS) (Malaria) cum Member Secretary, MSVBDCS, three out of five District Medical Officers (DMO)³, nine out of 25 Community Health Centres (CHC) and 16 out of 101 Primary Health Centres (PHC) covering 68 per cent (Rs. 16.07 crore) of the total expenditure (Rs. 23.70 crore) incurred during the period.

3.1.4 Audit Objectives

The review was conducted with the objective of assessing whether:

- the objective of reducing the incidence of malaria was achieved;
- mortality rate due to malaria was reduced;
- adequate funds were provided by the Central/State Governments and funds were utilised for the intended purpose; and,
- implementation of the programme was effectively monitored and periodically evaluated.

¹ MI: Medical Institution. ²DVBDCS: District Vector Borne Disease Control Society.

³ Khasi Hills, Jaintia Hills & West Garo Hills.

3.1.5 Audit Criteria

Audit findings were benchmarked against the following criteria:

- Operational Manual for Malaria Action Programme (MAP)⁴ and Guidelines of NRHM;
- Annual Work Plans;
- State Budget;
- Prescribed monitoring mechanism.

3.1.6 Audit Methodology

Before commencing the review, an entry conference was held (April 2008) with the Commissioner and Secretary of the Department, wherein the audit objectives, criteria and methodology were explained. Districts were selected on the basis of probability proportionate to size with replacement method. Utilisation of funds received from the GOI and the State Governments, adherence to scheme guidelines, implementation of various strategies, *etc.* were analysed to arrive at audit conclusions. Audit findings were discussed with the Deputy Director of Health Services (October 2008) in an exit conference and the replies of the Department have been incorporated in the report at appropriate places.

3.1.7 Audit Findings

The important points noticed in the course of review are discussed in the succeeding paragraphs.

3.1.8 Planning

NRHM emphasized the need for decentralised planning and implementation arrangements to ensure that need based and community owned district health action plans become the basis for intervention in the health sector. The districts were required to prepare perspective plans for the entire mission period (2005-12) as well as annual plans. The perspective plan was prepared by the State Mission Director of NRHM on the basis of information furnished by the district societies through the MSVBDCS.

Guidelines of NRHM envisaged achievement of targets of 50 *per cent* reduction of malaria mortality rate by 2010 and an additional 10 *per cent* by 2012. Further, the objectives of NVBDCP were to reduce the incidence of malaria and reduce mortality rate by 10 *per cent* during 2007-08. The DDHS (Malaria), however, stated (August 2008) that no intermediate target was fixed in respect of the activities under the programme. Due to non-fixation of targets with proper status indicators/baseline, achievement of the programme objectives remained unascertained.

⁴ The Operational Manual for Malaria Action Programme was prepared (March 1995) by the Union Ministry of Health & Family Welfare for use as broad guidelines by different tiers of workers involved in malaria control programme.

3.1.9 Financial Management

3.1.9.1 Funding Pattern

The expenditure on National Malaria Eradication Programme (NMEP) was borne by the Central and the State Governments on a 50:50 basis till November 1994. The total expenditure both on operations and cost of material and equipment is being met entirely by the GOI with effect from December 1994 and emoluments of multipurpose workers and existing sanctioned Plan/Non-Plan staff is being met entirely by the State. The same financial management procedure had been followed after introduction of NVBDCP (2004) and NRHM (2005). Assistance in kind is also being provided by the GOI in the form of anti-malarial drugs, DDT, rapid diagnostic kits and bed nets.

3.1.9.2 Budget and Expenditure

Budget provision and actual expenditure incurred during 2003-08 on implementation of the programme were as under:

Table 3.1

(Rupees in crore)

Year	Allotment				Expenditure				Saving (-) Excess (+)
	Non-Plan	Plan	CSS ⁵	Total	Non-Plan	Plan	CSS	Total	
2003-04	1.88	1.02	0.79	3.69	1.80	1.09	0.87	3.76	(+) 0.07
2004-05	1.83	1.11	0.40	3.34	1.73	1.01	0.49	3.23	(-) 0.11
2005-06	2.03	1.34	0.73	4.10	1.94	1.38	0.61	3.93	(-) 0.17
2006-07	2.48	1.82	0.12	4.42	2.16	2.00	1.04	5.20	(+) 0.78
2007-08	2.43	1.70	Nil	4.13	2.63	1.58	0.20	4.41	(+) 0.28
Total	10.65	6.99	2.04	19.68	10.26	7.06	3.21	20.53	

Source: Information furnished by the DHS.

In addition to the above, financial assistance is being provided by the GOI directly to the MSVBDCS since 2005-06 for implementation of the programme, as detailed below:

Table 3.2

(Rupees in lakh)

Year	Opening balance	Funds released by the GOI to MSVBDCS	Total	Funds utilised by MSVBDCS	Unutilised funds (Per cent)
2005-06	...	45.81	45.81	35.76	10.05 (22)
2006-07	10.05	132.53	142.58	136.10	6.48 (5)
2007-08	6.48	155.77	162.25	145.44	16.81 (10)
Total		334.11		317.30	

Source: Information furnished by the MSVBDCS.

3.1.9.3 Non-reconciliation of Expenditure

According to the Budget Manual, reconciliation of Controlling Officer's figures of expenditure with those booked in the accounts of the Accountant General (Accounts & Entitlements) (AG) should be done periodically.

⁵ CSS: Centrally Sponsored Schemes.

There was wide variation between the DHS's figures and those reflected in the Appropriation Accounts prepared by the AG for the period 2003-08. While the Appropriation Accounts showed Rs. 25.58 crore expenditure during 2003-08 under the programme, Rs. 20.53 crore was reflected in the records of the DHS. The discrepancy of Rs. 5.05 crore was due to non-reconciliation of expenditure during 2003-08 by the DHS with the records of the AG.

3.1.9.4 Variation between budget allotment and actual expenditure

Table 3.1 above shows variation between the budget allotment and actual expenditure ranging from two *per cent* to 18 *per cent*, indicating poor budgeting and lack of internal control. During 2003-04, 2006-07 and 2007-08, expenditure exceeded the budget allotment by two *per cent*, 18 *per cent* and seven *per cent* respectively due to payment of wages and travelling expenses of DDT spray workers, which was stated to be met out of the allocation made under State fund.

3.1.9.5 Delay in release of Central funds

Under the NVBDCP, the GOI released Rs. 68.36 lakh and Rs. 68.39 lakh to the State in August/November 2005 and March 2006 respectively. Of this, the State Government released Rs. 68.39 lakh to the DHS (MI) during 2005-06. The balance amount of Rs. 68.36 lakh was released by the State Government to the DHS (MI) after a delay of two years in March 2008, who in turn released the amount to the DDHS (Malaria) in June 2008, thereby adversely affecting the implementation schedule of the programme.

3.1.9.6 Utilisation Certificates

Except for the year 2007-08, utilisation certificates against the funds received from the GOI by the Society have been furnished. Further, the separate accounts being maintained by the Society are got audited by the Chartered Accountants every year.

3.1.10 Programme Implementation

3.1.10.1 Increase in Malaria incidence

During 2003-08, the Department had spent Rs. 23.70 crore on the implementation of the programme (excluding value of material and equipment supplied by the GOI in kind). The incidence of malaria cases, however, remained high. Annual Parasite Incidence (API), i.e., number of positive cases detected per thousand population, which was 7.9 during 2003 reached a peak of 14.7 during 2007, an increase of 86 *per cent*. Also, the death cases due to malaria increased from 38 in 2003 to 237 in 2007, an increase of 524 *per cent*, thereby frustrating the objective of reducing the mortality rate by 10 *per cent* during 2007-08. The position of death cases in the State as well as in the three test-checked districts is given below:

Table 3.3: API and number of malarial deaths in the State**(in number)**

Year	Positive cases	Plasmodium falciparum cases	API ⁶	Death cases
2003	18,151	12,238	7.9	38
2004	18,082	15,576	7.8	29
2005	16,816	14,758	7.2	41
2006	29,924	25,907	12.9	167
2007	33,979	28,179	14.7	237

Source: Information furnished by the DDHS (Malaria).

Table 3.4: Position of API and number of deaths in three district Malarial Units covering five Revenue Districts**(in number)**

Year	East Khasi Hills & Ri Bhoi			Jaintia Hills			West & South Garo Hills		
	Positive cases	API	Death cases	Positive cases	API	Death cases	Positive cases	API	Death cases
2003	Not available			3,154	9.86	2	9,907	14.60	27
2004	3,477	6.00	5	2,510	7.55	9	10,619	15.50	29
2005	3,727	5.57	16	2,477	7.11	35	9,641	14.00	23
2006	8,870	13.40	19	6,098	17.13	53	17,580	25.30	46
2007	5,547	23.03	42	4,235	11.53	10	23,774	32.60	114

Source: Information furnished by the DMOs of the respective districts.

While in Jaintia Hills District, there was some improvement in both API and death cases due to malaria during 2007 compared to the previous year, in East Khasi Hills and Ri-Bhoi Districts, the death cases increased by 121 *per cent* over the previous year. West and South Garo Hills Districts were mainly responsible for increase in the death cases in the State where the positive and death cases increased by 140 *per cent* and 322 *per cent* respectively, over the five-year period ending 2007. The increase was attributed by the DDHS (Malaria) to delay in detection and treatment of malaria cases through surveillance activities, which were not up to the mark, inadequate chemotherapeutic measures and non-provision or delayed provision of radical treatment⁷ to falciparum cases.

Thus, despite an expenditure of Rs. 23.70 crore during 2003-08, the NVBDCP almost remained a non-starter and the entire expenditure remained largely unfruitful.

The DDHS (Malaria) stated (August 2008) that action had been taken to reduce the incidence of malaria through the use of RD kits, DDT spraying, intensifying IEC programme and involvement of NGOs. However, the fact remains that the action taken to reduce the incidence of malaria is yet to yield the desired results.

3.1.10.2 Collection and examination of blood smears

Surveillance covers collection of blood smear and its examination to detect the malaria parasite. According to the prescribed norms, one surveillance worker was to be provided for 4,000 persons and for every four workers, there was to

⁶ API has been calculated on the base population figure of 2003 which is 23,06,069 as furnished by the DDHS (Malaria).

⁷ Radical treatment ensures a complete cure from malaria in the positive case and makes the patient non-infective to mosquitoes.

be one Surveillance Inspector to supervise the surveillance activities. Against a minimum of 577 surveillance workers required for collection of blood smear of 23.06 lakh population of the State during the calendar years 2003 to 2007, only 184 workers were in position.

According to the information furnished by the Deputy DHS, Malaria, during the years 2003 to 2007, blood collection and examination were done in respect of 12.41 lakh persons by utilising 5,17,700 micro-slides and 39,200 pricking needles. As per the MAP, one piece of micro-slide is required for collection of blood from one person. Therefore, the claim of the Deputy DHS is questionable.

The DDHS (Malaria) stated (October 2008) that micro-slides can be used for three or more times and the health workers are still using hagedorn needles after sterilization. The use of a micro-slide more than once is contrary to the MAP and as per the Operational Guidelines for Laboratory Technicians published by the Directorate of NVBDCP, auto disposable pricking needles are best suited for collection of blood smear and under the programme, sterile lancets are being supplied for malaria microscopy, which should be disposed/discarded after use.

Thus, lack of health education and awareness among the departmental officials could play havoc with the lives of people.

3.1.10.3 Shortfall in Indoor Residual Spray

Vector control for malaria and other vector borne diseases depend upon the use of Indoor Residual Spray (IRS), which is the easiest and most cost effective approach for breaking man vector contact. Under the modified plan of operation, spray operations are to be carried out in all areas with API2⁸ and above with two rounds of insecticide (DDT 50% wettable powder) to prevent the transmission of parasites. The Environmental Management Plan also prescribed the requirement of two rounds of IRS with 75 tonnes of insecticide per million population per round. Spray operation in the State was conducted between March-May (first round) and August-October (second round) each year with a gap of around three months. The population targeted for spraying operations during the 2003-07 (calendar year) and coverage thereagainst is given below:

Table 3.5

(Population in lakh)

Year	Target		Coverage		Shortfall	
	First round	Second round	First round	Second round	First round	Second round
2003	13.87	13.28	9.37	8.72	4.50	4.56
2004	12.30	13.09	8.25	8.24	4.05	4.85
2005	13.84	6.13	9.46	3.89	4.38	2.24
2006	13.14	11.86	8.58	8.24	4.56	3.62
2007	12.89	12.89	7.53	9.08	5.36	3.81
Average per year	13.21	11.45	8.64	7.63	4.57	3.82

Source: Information furnished by the DDHS (Malaria).

⁸ Number of two positive cases detected in an area per thousand population per year.

As can be seen from the above, during the period 2003-07, the annual average population targeted to be covered under spraying operations was 13.21 lakh. However, the target for the second round was reduced to 11.45 lakh leaving 1.76 lakh beyond the scope of spraying operations. Though the target was much below the total population of the State (23.06 lakh), this also could not be achieved because of shortfall in coverage of 4.57 lakh population per year in the first round of operations conducted during the period. The position of second round of spraying operations was also not encouraging, as the annual coverage (average) was only 7.63 lakh as against 8.64 lakh population covered in the first round.

Shortfall in coverage of 1.01 lakh population every year in the second round of spraying operations and 4.57 lakh targeted population under both rounds of operations, thus, indicates that the IRS was inadequate, which led to an increase in API and malarial deaths during 2003-07, thereby rendering the entire operation an exercise in futility. Besides, there is every possibility of malaria virus insects developing resistance and rendering the use of insecticide in the future useless.

3.1.10.4 Procurement of hand compression sprayers

Indoor Residual Spraying is an important component of integrated vector control strategy for control of vector borne diseases. Hand Compression Sprayers (HCS) were used by the spray workers in Meghalaya for spraying of DDT (50 % wp). As per NVBDCP guidelines, the discharge rate of HCS used in spraying should be between 750 and 850 ml per minute. The DDHS (Malaria) cum Member Secretary, MSVBDCS procured (August 2007) 150 Marut HCS from a Shillong based firm at a total cost of Rs. 7.57 lakh. The HCS were distributed to the District Malaria Units of the State. The District Malaria Officer (DMO), East Khasi Hills, however, had discarded these HCS on the ground that these did not have adequate discharge capacity (450 to 500 ml per minute) and that, with the use of these HCS, the spraying schedule would be disturbed and it would not be possible to cover the targeted population within the targeted period. The DMO, Jaintia Hills District stated (August 2008) that the shortfall in coverage in spraying operation with the HCS with inadequate discharge capacity was managed by spray workers working extra hours without additional wages.

The DDHS (Malaria) stated (October 2008) that the HCS were certified by the Entomologist and the Joint Director, NVBDCP and that no complaints were received from the districts other than East Khasi Hills. The reply is not acceptable because as per the tour report of the Consultant appointed by the MSVBDCS, the discharging capacity of the Marut HCS was 480-500 ml per minute compared to 750 ml per minute capacity of the old sprayer being used earlier and therefore, the Consultant commented that there would be optimal coverage with the older sprayer only.

Thus, procurement of HCS having less discharging capacity did not yield the desired result rendering the expenditure of Rs.7.57 lakh largely unproductive.

3.1.10.5 Inadequacy in checking of the quality of spray

The DMOs were responsible for achievement in coverage of spray operation in areas under their jurisdiction. They were to visit at least five to 10 villages every week to check the quality of spray. As per the norms, each district malarial unit was to be equipped with four vehicles and there were to be two van cleaners for each district malarial unit. In three test-checked districts (East Khasi Hills, Jaintia Hills and West Garo Hills), there were five vehicles on the road during 2003-08 against the requirement of 12. Availability of fewer vehicles than the requirement, thus, left the DMOs of these districts with little scope to check the quality of spray operations in the villages under their jurisdiction. In the absence of proper check by the DMOs, inadequacy in the quality of spray could not be ruled out.

3.1.10.6 Malaria unit and mobile malaria unit

As per the MAP, Meghalaya was considered a high risk area. There were, however, only five⁹ District Malarial Units in the seven districts of the State. The District Malaria Officers (DMO), East Khasi Hills and Garo Hills were looking after the activities of the other two districts (Ri-Bhoi and South Garo Hills) in addition to their own, thereby giving little scope to focus on the activities of the programme in these two districts.

Further, as per the norms, there should be one mobile malaria control unit in every district in high risk areas. These mobile units were to be equipped with the prescribed equipment and staff. The duty of the medical officer in-charge of these units was to monitor the incidence of malaria in different PHC areas of the district. No such unit had, however, been created in any of the five district malarial units of the State. Consequently, the prescribed level of monitoring of the incidence of malaria could not be ensured, thereby leaving scope for increase in the incidence of malaria.

During the exit conference, the DDHS (Malaria) did not specify the reason for the shortfall of malaria units and non-creation of mobile unit, but stated that the mobile units provided to the District Medical & Health Officers under NRHM would monitor the incidence of malaria also. The reply is indicative of the fact that there was no effective measure to monitor or control the incidence of malaria prior to the establishment of mobile units.

3.1.10.7 Vector Control Measures

According to the MAP, an Entomological Cell was to be established in the State to evaluate the susceptibility of vector to insecticides. The existing Entomological Cell was established in the State during 1985 for (a) entomological observation, (b) imparting training on entomological investigation to the medical officers, technicians/microscopists, spray workers, (c) carry out awareness programme and (d) supervision and monitoring of spray operation. This Cell had, however, not been functioning properly since

⁹ Khasi Hills, Jaintia Hills, West Khasi Hills, West Garo Hills and East Garo Hills.

its inception, due to the non-availability of the requisite manpower such as microscopist, technicians, etc. In the absence of proper infrastructure, entomological observations and other activities of the Cell remained largely dormant.

Stressing the need for a well equipped entomological Cell, the DDHS (Malaria) stated (October 2008) that the Government had been requested for providing proper infrastructure to the Cell and that response was awaited.

3.1.11 Monitoring and Evaluation

As per the MAP, the medical officers of the Public Health Centres and District Malaria Officers should keep a watch on the malaria incidence in the community. Further, the NRHM envisaged an intensive accountability framework through a three pronged process of community based monitoring, external surveys and stringent internal monitoring.

According to the DDHS (Malaria), the programme was being monitored through the collection of various reports (surveillance, blood smear, incidence of malaria cases, etc.). He further, stated that community leaders were involved in creating awareness and that training was imparted to the medical officers, laboratory technicians, community volunteers and NGOs with the funds provided by the GOI under GFATM¹⁰. The veracity of the claim of the DDHS could not be ascertained in audit due to non-production of the relevant records. Absence of a well equipped entomological cell, mobile units and vehicles required to check the quality of spraying as mentioned in the foregoing paragraphs, however, indicated that the monitoring mechanism of the implementation of the programme in the State was ineffective. Evaluation of the programme was also not done to assess its impact on eradication of malaria and reduction of deaths due to malaria.

3.1.12 Conclusion

The overall impact of the programme was far from satisfactory because of the failure of the Department in reducing the mortality rate due to malaria. Despite expending a substantial amount, death cases due to malaria had increased over the five year period ending March 2008. Deficiency in collection and examination of blood smears and shortfall in spraying of DDT led to increase in the death cases. Sharp increase in malaria morbidity (86 *per cent*) and malaria mortality (524 *per cent*) during the current year compared to 2003 indicates that the possibility of achieving the objective of reducing the malaria morbidity and mortality by 30 *per cent* and 50 *per cent* by 2010 is remote.

¹⁰ The GOI signed a Grant Agreement with the Global Fund for AIDS, TB & Malaria (GFATM) in 2005.

3.1.13 Recommendations

On the basis of the shortcomings pointed out in the foregoing paragraphs, the following recommendations are made for streamlining the implementation of the scheme:

- **Timely release of funds should be ensured for effective implementation of the programme.**
- **Efforts should be made to reduce the mortality rate due to malaria by 50 per cent as envisaged under the programme.**
- **Requirement of insecticides, microslides and pricking needles should be properly assessed and procured on a timely basis to avoid resurgence of malaria.**
- **Proper infrastructure should be created for effective implementation of the programme.**
- **Monitoring mechanism needs to be strengthened and accountability should be fixed at various levels for effective implementation of the programme to serve the objective of controlling and eradicating of the incidence of malaria.**

Audit findings were reported to the Government in September 2008; reply had not been received (November 2008).