AGENDA NOTES

CONFERENCE OF CENTRAL COUNCIL OF HEALTH & FAMILY WELFARE

PARLIAMENT HOUSE ANNEXE
OCTOBER 14-15, 1995

GOVERNMENT OF INDIA
MINISTRY OF HEALTH & FAMILY WELFARE
NEW DELHI

Redfem
Alok, VHAI,
JN
29/9/95

(9)

Agenda Item No. XIV

NATIONAL MALARIA ERADICATION PROGRAMME INCLUDING KALA-AZAR CONTROL PROGRAMME

MALARIA

For controlling the malaria disease a nation-wide Malaria Control Programme was launched as early as 1953 and enthused by the excellent results achieved, the Government launched a National Malaria Eradication Programme in 1958 with an objective of eradicating the disease. After initial spectacular success in controlling the disease and bringing down its incidence in the community from 75 million during pre-eradication to 0.1 million by 1965, the programme received setback due to various constraints of financial, logistics, administrative and technical nature. This resulted in the resurgence of the malaria disease during early seventies and launcing a Modified plan of operation (MPO) in 1977 to tackle the situation. The objectives of the M.P.O. were(i) effective control of malaria to bring reduction in malaria morbidity, (ii) prevent deaths due to malaria and (iii) retention of the achievements gained. The main strategies adopted are ;

i) Early case detection and prompt treatment,

ii) Vector control by house spraying in rural areas with Annual Parasite incidence per thousand population 2 & above with appropriate insecticides and by recurrent anti larval measures in urban areas.

iii) Health education and community participation.

With the implementation of the revised approaches as above, the incidence of malaria was brought down from 6.47 million cases in 1976 to 2.18 million cases in 1984 and since then total malaria cases are

contained around two million annually.

The epidemiological data for the year 1976, and 1984 onwards are as follows :-

YEAR	MALARIA CASES (IN MILLION)	P.F.CASES (IN MILLION)	DEATHS
1976	6.47	0.76	59
1984	2.18	0.65	247
1985	1.86	0.54	213
1986	1.79	0.64	323
1987	1.66	0.62	188
1988	1.85	0.68	209
1989	2.05	0.76	268
1990	2.02	0.75	353
1991	2.11	0.92	421
1992	2.13	0.88	422
1993	2.20	0.85	354
1994	2.23	0.83	1167
1995(up to June, 95)	0.58	0.22	457 (out of these 197 suspected unconfirmed)

From these data it is evident that with the implementation of MPO the malaria situation has been contained around two million cases since 1984 inspite of various constraints of financial, logistics, administrative, operational and technical nature and added to it, onslaught of natural factors promoting the malariogenic conditions in certain areas specially hilly and forested-tracks in the North Eastern region as well as central peninsula. The P.falciparum incidence could also be contained around 0.8 million cases per annum.In the major states malaria epidemiological

profile during recent years is as follows:

MALARIA EPIDEMIOLOGICAL HIGHLIGHTS - MAJOR STATES 1993 TO 1995 (UP TO JUNE)										
Sl. No.	STATE	MALARIA EPID. PROFILE-PERCENT TO TOTAL COUNTRY								
		1993			1994			1995		
		CASE	PF	DEATH	CASE	PF	DEATH	CASE	PF	DEATH
1.	Orissa	14.6	32.0	33.7	12.4	28.8	6.6	16.5	36.8	7.0
2.	Gujarat	13.8	9.0	7.0	11.0	7.9	1.2	9.4	4.3	
3.	Maharashtra	11.4	8.0	4.3	12.5	9.9	0.8	12.8	8.6	0.2
4.	Madhya Pradesh	12.8	17.6	3.4	12.7	15.0	2.4	9.5	12.7	
5.	Rajasthan	4.8	3.2	5.4	10.3	10.6	39.0	12.0	6.3	6.5
6.	Assam	5.4	9.4	13.5	6.7	10.7	5.8	14.4	19.5	65.0
7.	Karnataka	8.9	5.7		9.2	3.6	0.2	8.8	1.1	0.4
8.	West Bengal	4.0	0.7	10.5	3.0	1.5	4.4	2.0	1.1	9.1
9.	Uttar Pradesh	5.1	0.6		4.3	0.7		1.3	0.2	
10.	All NE States	8.3	12.1	31.0	10.9	15.1	43.0	16.7	22.2	76.0

TARGETS AND ACHIEVEMENTS

Under the physical targets annual blood slide examination rate ABER is taken which indicates efficacy of surveillance which have been fixed to a minimum to 10% of population under technical target for spray the area having more than 2 annual parasite incidence(API) per 1000 population in 3 sucessive years, is targeted to be protected with appropriated insecticides.

A. FOR THE COUNTRY AS A WHOLE

PARAMETERS	YEAR	TARGET (API)	ACHIEVEMENTS
I) A.P.I.	1990	1.9	2.57
(Annual Parasite	1993	NOT FIXED	2.64
Incidence)	1994	NOT FIXED	2.58
	2000 A.D.	0.5	

i) ABER (Annual Blood Examination Rate)	YEAR	TARGET	ACHIEVEMENTS % Of target
	1990	10% OF THE POPULATION	93.8
	1993	---DO---	93.8
	1994	---DO---	87.3
iii) POPULATION PROTECTED WITH RESIDUAL INSECTICIDE	1993	159.49 MILL.	66.75
	1994	162.67 MILL.	58.52
	1995 (PROJECTED)	158.34 MILL.	

B. ACHIEVEMENTS BY THE STATES

The States which have achieved physical targets(against 10%-ABER) during last year are Andhra Pradesh (13.13), Arunachal Pradesh (35.07), Gujarat (16.10),Haryana (11.95), Himachal Pradesh (13.83), Karnataka (12.71), Maharashtra (13.91), Meghalaya (11.20), Mizoram (28.87), Punjab (11.76), Rajasthan (11.32), Sikkim (12.61), Andaman & Nicobar Island (51.08), Chandigarh (14.66) Dadara & Nagar Haveli (29.98), Daman & Diu(21.03), Delhi (11.31) and Pondicherry (26.04).

The States which could not achieve physical target of ABER are Bihar (0.65), Assam(9.91), Kerala(3.59), Goa (8.55), West Bengal (3.35), Jammu & Kashamir (8.79), Madhya Pradesh (9.84), Manipur(8.52), Nagaland(5.07), Orissa (8.55), Tamil Nadu (8.63),Tripura(8.21), Uttar Pradesh(5.52) and Lakshadeep(5.20).

The percentage achievements of States against the technical target for spray operation during 1994 are as indicated in the bracket against each State, Assam (81.49), Jammu and Kashmir (69.2), Madhya Pradesh(70.31), Maharashtra(69.41), Meghalaya(85.06), Mizoram(86.25), Tripura(97.07), A&N Island (121.74),Chandigarh(250), Daman& Diu(125), Andhra Pradesh(50.82), Arunachal Pradesh(53.97),

Bihar(58.08), Gujarat(50.29), Himachal Pradesh(52.8), Karnataka(45.26), Manipur(50), Punjab(53.9), Haryana(32.04) Goa(10.0) and Tamil Nadu(4.95)

MALARIA IN URBAN AREAS

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 and detection and treatment of cases through the existing health services.

In this scheme all the towns having forty thousand and more population and reporting 2 and more API are to be covered .The scheme was sanctioned for 181 towns distributed in 18 states and two UTs. It has so far been implemented in 131 towns. During 1993 about 2.3 lakh malaria cases have been reported from these towns and 60 towns (46%) showed a decrease in the number of malaria cases as compared to 1992. During 1994, 54 towns showed a decrease in malaria cases by 51% as compared to the corresponding period of 1993.

BUDGETARY ALLOCATION TO NMEP

NMEP is centrally sponsored category - II scheme based on 50:50 sharing between the States and Centre, except in case of seven North Eastern States of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura where it has been made 100% centrally sponsored with effect from December, 1994. The central assistance provided during the last three years and budget provision for 1995-96 (including Kala-azar) are as follows :-

YEAR	CENTRAL ASSISTANCE(Rs.IN LAKHS)
1992-93	9800.14
1993-94	11054.28
1994-95	11000.00
1995-96(B.E)	13900.00

SPECIAL ACTION TAKEN

i) To intensify malaria control activities in the seven North Eastern States of Assam, Arunachal Pradesh, Manipur, Mizoram, Nagaland and Tripura, 100% central assistance with effect from Ist Dec.94 has been provided.

ii) For tribal areas of seven states of Andhra Pradesh, Bihar, Gujarat, Maharashtra, Madhya Pradesh, Rajasthan, and Orissa external assistance(World Bank) for intensification of malaria control activities is contemplated.

iii) Honorable PM reviewed the programme on the 5th Dec'94 and gave directions to identify worst affected areas through an expert committee and take specific measures to curb resurgence of disease.Accordingly in Dec. 1994 an Expert Committee was appointed and submitted its report on 27 January 1995 .The main recommendation were a) identifying the high risk and hard core areas on the basis of malaria mortality, doubling of slide positivity rate during the last 3 year provided it is 5%, predominance of Pf,drug resistance and vulnerability of the areas etc, b) Accelerating control measures in 29 identified cities and towns where urban malaria scheme is already being taken, c) More DDC and FTD to make drug available in every village,d) Special attention to projects and e) Emphasis on Training.

The recommendations have been communicated to the States who are implementing.

iv) Prioritization of areas through malariogenic stratification for specific control measures adopting variables like topography, average rainfall, vector prevalence , average annual parasite incidence, epidemic potential and vulnerability.

v) Intensification of information, education and communication system to increase awareness in malaria control programme, from 1st May to 7th May,1995 'MALARIA WEEK' was observed throughout the country for this approach.

vi) The State Govts. have been requested to ensure availability of drugs in every village and in areas with inadequacy of surveillance, community volunteers may be involved as Drugs Distribution Centres/Fever Treatment Depots.

vii) As a special support the Central Government have sanctioned 100 vehicles; one each to highly affected and needy districts in the country and 1660 microscopes to strengthen lab. services in the State . In addition 4000 microscopes are being procured from German aid for the same purpose.

viii) State have been requested to establish High Power Board under the chairmanship of the Chief Secretary at State level and under the District collector at the district level to review the control measures and ensure inter and intra - departmental coordination and community participation for malaria control.

DIFFICULTIES IN THE IMPLEMENTATION OF THE PROGRAMME

1. Shortage of staff and large number of vacancies at various levels as well as frequent transfer of Programme Officers at the State Hqrs , Zonal level and District level hamper the programme implementation very adversely.

2. Spray schedules are not being strictly followed by States due to administrative and financial constraints. In some cases population needing insecticidal protection is not fully covered.

3. The various developmental projects and construction activities increase the malariogenic condition and do not have provision in the project for vector control permitting thereby disease transmission.

4. Besides financial & logistics constraints, the inadequacy of road worthy vehicles adversely affect the programme activities and their supervision & monitoring.

5. In absence of legislative measures in the form of model bye-laws, the vector control activities in the urban areas do not get desired level of support from the community & sanitary deptt.

6. Transmigration of labour population from one area to another without screening for malaria, increase the transmission potential specially spread of resistant strain.

7. Inadequate emphasis to training & refresher courses of technical people adversely affects the smooth implementation of programme activities.

KALA-AZAR

Kala-azar is a serious public health problem in Bihar and West Bengal. After its resurgence in Bihar in the early seventies the disease spread from the four districts to adjoining areas. About 31 districts of Bihar and 9 districts of West Bengal are now affected by Kala-azar. About 75 million population is living in the endemic areas for Kala-azar.

Epidemiological situation

year	Cases	Deaths
1991	61670	838
1992	77102	1419
1993	45459	710
1994(prov.)	25531	382
1995(Upto May)	7595	71

The increasing trend of the disease is evident from the fact that the total number of cases which were 17806 with 72 deaths in 1986 rose to a total of 77102 cases with 1419 deaths in 1992. However, this trend has been arrested in 1993 with a total number of 45459 cases with 710 deaths, which has further declined significantly during 1994 as total 25531 cases and 381 deaths have been reported .

In view of the growing problem planned control measures were initiated to contain Kala-azar. Until 1990-91 the assistance for the Kala-azar control was being provided by the Government of India out of the National Malaria Eradication Programme budget provision . However, specific funds to the tune of Rs 4.06 crores were made available during 1990-91 for control of Kala-azar. Since then the Government of India has considerably enhanced the inputs to Rs 15.38 crores in 1990-91 .

During 1992-93 Rs 20.00 crores were provided against annual plan outlay of Rs 15.00 crores . For 1993-94 Rs 18.64 crores were provided as material assistance.During 1994-95 Rs 5.77 crores worth materials have been utilised by the States against the provision made of Rs. 20.00 crores. For 1995-96 a provision of Rs. 20.00 crores has been made.

STRATEGY FOR CONTROL

The strategy for Kala-Azar control broaoly includes 3 major activities :

i) Interruption of transmission for reducing vector population by undertaking indoor residual insecticidal spray twice annually.

ii) Early diagnosis and complete treatment of Kala-azar cases.

iii) Health education for community awareness .

In view of the financial constraints, Government of India provides the total cost on medicine and insecticides for Kala-azar in Bihar. To ensure optimum utilisation of available resources district action plan are prepared under which exclusive infrastructure is deployed for the Kala-azar activities. Material and equipment with strict supervision is provided. Monitoring and concurrent and consecutive evaluation are regularly carried out.

WORLD HEALTH ORGANIZATION

REGIONAL OFFICE FOR SOUTH-EAST ASIA

INTERCOUNTRY CONSULTATIVE MEETING OF NATIONAL MALARIA CONTROL PROGRAMME MANAGERS, NEW DELHI, 20-24 MARCH, 1995

SEA/MAL/Meet/1

21 February 1995

COUNTRY REPORT

INDIA

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Insecticides

some dists of Guj + Maharashtra may move to pyrethrs

synth pyrethrs 5-8 more expensive

larvicide fenthion rounds

Evals

strategies recommended

- Integ'd to PHC services

- malariogenic stratifics - done in 5 states

expert gp set up after PM meeting

NE States
- 4 dists
pop 3.8%

[illegible] 15.03%

launched 71-72
70 mill

- Urban mal scheme introduced

- Synthetic pyreths

- Res - training

- [illegible] sanit measures at project sites

- cx involvement

central budget ↑ 30% in last few [illegible]

most [illegible] + drugs some res : training

- [illegible]

1100 mil Rs ~~[illegible]~~ now 40 mill Rs [illegible]

21 cities need extra support

- inadequate [illegible]
- construction activities + water storage
- labour migr
- lack of maintenance of overhead tanks / wells / coolers
- Diffused responsibility of major sectors
 eg rails / defense
 lev [illegible]
 munic corp
 worked with Delhi

N3 Tribal areas isolated

(1) + people [illegible] within, engineer [illegible] in 7 dists of ea State

(2) + cx involvement

(3) + 7 NE states : [illegible] central assistance approved 12/94

[illegible] methods within their [illegible]

look at how [illegible] can be involved [illegible]

capabilities. [illegible] tanks in Rajasthan!

→ Larger plan
[illegible] not create [illegible] many new posts

COUNTRY REPORT ON INTER-COUNTRY CONSULTATIVE MEETING OF NATIONAL MALARIA CONTROL PROGRAMME MANAGERS, NEW DELHI, 20-24, MARCH, 1995

1. Basic information :

The following are the 10 top diseases in India based on report of occurrence of deaths:-

1. Asthma & Bronchitis
2. Heart Disease
3. Pneumonia
4. Tuberculosis (T.B)
5. Prematurity
6. Cancer
7. Anaemia
8. Paralysis
9. Injuries resulting from vehicular accidents
10. Acute abdomen.

Source: Health information of India - 1992.

2. Objectives of the programme:

a -Prevention of deaths due malaria.
b -Reduction of morbidity due to malaria .
c -Maintenance of achievements gained so far.

REVISED OBJECTIVES:

a-Prevention of deaths due to Malaria
b-Reduction of morbidity due to Malaria — to 0.5 mill by yr 2000
c-Maintenance of achievements gained so far.
d-Early containment of epidemics

3. Stratification of malarious areas :

Criteria of stratification used

a). Criteria under Modified Plan of Operation

Under the National Malaria Eradication Programme the malarious areas of the country are categorized into two broad strata, namely areas with API 2 and above and areas with less than 2 API for taking intervention measures.

States [illegible] recurrence
Most mal. in state [illegible]
+ [illegible]

Deaths shot up to >1000 in 94. Rajasthan
NE: Nagaland Manipur
[illegible]

[illegible] — 100 yr

[illegible] 41
M. P. 42
[illegible]

b). Criteria used under Malariogenic stratification

It was decided to take into consideration the factors which are epidemiologically more relevant and for which data can be generated on continuous basis through the existing health care delivery system. Thus the following six variables were identified:-

1. Topography
2. Average annual rainfall
3. Vectors prevalent in the areas
4. Average API for the last five years
5. Epidemic potential
6. Vulnerability

Some of the variables for e.g. topography, vectors etc. are different in descriptive in nature. To simplify methodology of compilation and processing the malariogenic impact of different variables they are given weights from 0-10 depending upon their expected impact.

After assigning the weights to these six variables, cumulative weights are arrived at and areas are divided into the following five strata:-

Stratum	Cumulative weights
I	0-10
II	10.1 - 15
III	15.1 - 20
IV	20.1 - 25
V	More than 25

This exercise of Malariogenic stratification is being done state wise in a phased manner, with the assistance of W.H.O. country budget. Four states, namely, Karnataka, Maharashtra, Gujarat and Rajasthan have been stratified so far. Primary Health Center has been taken as the unit for this purpose in the states of Karnataka, Maharashtra and Gujarat whereas Section was taken as the unit in Rajasthan.

Population under different stratified areas

Stratum wise population for the states of Karnataka, Gujarat, Maharashtra and Rajasthan is given in the following table:-

Population (in 000's) in different strata

Sr. No.	State	Stratum I	II	III	IV	V	Total
1.	Karnataka	33462 *		2462	1448	1368	38740
2.	Gujarat	1496	4142	7457	6588	11798	31481
3.	Maharashtra	28225	12213	5336	2322	1151	49427
4.	Rajasthan	13175	6672	5704	3196	2742	31489

* Combined figures for strata I and II

Changes done after R M W G meeting

Recently, the Government of India constituted an Expert Committee to prepare an Action Plan to control malaria with area specific strategies. The Expert Committee categorised the areas into the following groups to arrive at area specific strategies :

1. Hardcore areas

Areas with difficult terrain and inhabited predominantly by tribal population reporting a great proportion of malaria morbidity and mortality.

2. Epidemic prone areas of North-Western plains, Indo-Gangetic plains and semi-arid climatic zones.

3. Project Areas

4. Triple resistant areas where the local vector is resistant to DDT, BHC and Malathion.

5. Endemic rural areas

6. Urban areas

Revised strategies based up on malariogenic stratification will, hereafter, be planned taking into consideration the Recommendations of this Expert Committee whose report is based on the Recommendations of RMWG meeting.

4. Malaria situation :

(a) Malaria information strata-wise during the last three years
Country: INDIA

1. Population ('000)

Year	Country Total	Malarious areas				Claime Free f Malari
		High >20 API	Moderate 2-20 API.	Low <2 API	Total	
1991	844324	15031	225460	567611	808102	36222
1992	264347	15350	229935	578852	824137	40210
1992	873775	15487	232300	584829	832616	41159

2. Epidemic Outbreak
Population affected(000)
BSE('000)
Reported Clinical cases
Est.Clinical Cases

NO OUTBREAK OF MALARIA DURING 1991,1992 AND 1993

Reported Malaria Deaths

Est.Malaria Deaths

* Village as Unit of Area

3. Case finding

Malaria information	Receptivity											
	High			Moderate			Low			Total		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
Reported Clinical Cases (in '000)	3157	3317	3251	27478	28891	28297	44524	46803	45851	75159	79011	77399
-No. Out patient ('000)	1089	1158	1170	9478	10063	10187	15358	16334	16507	25925	27575	27864
-Proportion of Out patient (%)	34.49	34.91	35.99	34.49	34.90	36.00	34.49	34.90	36.00	34.49	34.90	36.00
Reported Clinical Inpatient				NA								
-No.Inpatient('000)												
-Proportion to total admission (%)												
-Malaria Case Fatality Rate (%)												
Est Clinical Cases (in '000)	416	418	432	1350	1355	1403	351	353	365	2117	2126	2200
Reported Deaths Due to Malaria	151	97	104	224	291	206	46	34	34	421	422	344
Est.Deaths due to Malaria	151	97	104	224	291	206	46	34	34	421	422	344
Severe Malaria cases				NA								
Treatment Failure cases				NA								
BSE('000)	3157	3317	3251	27478	28891	28297	44524	46803	45851	75159	79011	77399
Positive ('000)	416	418	432	1350	1355	1403	351	353	365	2117	2126	2200
SPR %	13.17	12.59	13.29	4.91	4.69	4.96	0.79	0.75	0.80	2.82	2.69	2.84
Pf cases	308061	293905	284871	519680	498816	480561	90747	86525	83915	918488	876246	849347
Pf%	74.05	70.38	65.92	38.49	36.58	34.25	25.83	25.54	22.99	43.38	41.22	38.60

4. Vector Control

Methods	High			Moderate			Low			Total		
	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
-population protected under planned spray operation (000)	15031	15350	15487	105769	71430	51263	0	0	0	120800	86780	66750
-population protected under emergency (due to epidemic/ outbreak) spray operation ('000)	0	0	0	551	5	631	335	7	260	886	12	891
Biological control * -Population Protected ('000)												
Source Reduction * -Population Protected ('000)	1230	1260	1230	12455	12800	14152	58452	59949	61484	73137	75009	76926
Personal Protection -Population Protected ('000)												

(* = Integrated approach is being adopted in urban areas)

(b) Epidemiological analysis

Population under malarious areas of the country during the years 1991 to 1993 is more or less stable. Around 15 million are residing in highly malarious areas; 225 million in moderately malarious; and around 568 million in low malarious areas of the country during these years. There were no reports of malaria epidemics during these three years.

The number of clinically reported cases of malaria showed slight decline during 1993 as compared to 1992. Information about the number of in-patients due to malaria in the country is not available. Number of reported deaths due to malaria declined in the year 1993 (344) as compared to 1991 and 1992 (421 and 422 respectively). Information on deaths due to malaria on clinical grounds and the number of severe cases of malaria is not available. The proportion of Pf cases has assured the gradual declining trend during these three years (43.38 to 38.60).

Population protected under planned insecticidal spray operation showed significant decrease during these three years. Information about population using personal protection methods are not collected under the National Malaria Eradication Programme, but these are being encouraged.

4.(c) Brief situation analysis of drug resistance of malaria and its control

- **No. of teams engaged in resistance testing.**

At present there are thirteen monitoring teams engaged in testing the response of P.falciparum to chloroquine and other anti-malarials.

- **No. of tests carried out, results obtained.**

During the period 1991-93 drug sensitivity tests have been carried out against chloroquine, Sulphadoxine + Pyrimethamine combination and Amodiaquine.Th results are as follows:-

(1991-93)

DRUG TESTED-CHLOROQUINE (25 MG/KG BD.WT DIVIDED OVER 3 DAYS)

Year	No. of cases	No.'S'	No.S/RI	No.RI	No.RII	No.RIII
1991	541	102 (18.9%)	311 (57.543%)	50 (9.2%)	34 (6.3%)	44 (8.2%)
1992	1045	134	646	135	61	69

		(12.82%)	(61.82%)	(12.92%)	(5.48%)	(6.6%)
1993	844	63 (7.5%)	580 (68.7%)	63 (7.5%)	82 (9.7%)	56 (6.6%)

II. DRUG TESTED SULFADOXINE + PYRIMETHAMINE

		(1000 mg)	(50 mg)			
1991	121	100 (82.64%)	17 (14.05%)	1 (0.82%)	1 (0.82%)	2 (1.65%)
1992	246	62 (25.20%)	179 (72.76%)	2 (0.81%)	2 (0.81%)	1 (0.40%)
1993	136	36 (100%)	0	0	0	0
"	*94	0	92 (97.87%)	2 (2.13%)	0	0

* Drug dosage is sulfadoxine 1500 mg + Pyrimethamine 75 mg.

III DRUG TESTED: AMODIAQUINE (2.5 mg/kg bd.wt. divided over three days

1991	14	0	10 (71.42%)	0	3 (21.42%)	1 (7.14%)
1992	49	27 (55.10%)	21 (42.85%)	1 (2.04%)	0	0

Note: Figure in parenthesis indicate percentage

- **Area/population affected by drug resistance (1991 through 1993).**

63 Primary Health Centers/18,90,000 population(approximate PHC population = 30,000), areas reported resistance to alternate drugs included.

- Action/plan to control its spread.

The concerned state governments are advised.

- Residual insecticidal spraying of human dwellings
- Ensuring good coverage f rooms

- Gearing-up the surveillance activities in order to detect malaria cases.

- to render prompt/radical treatment

- As per the drug policy of NMEP, no change of drug policy is advocated in RI resistance areas.

In RII areas, amodiaquine is being administered in place of chloroquine. In areas reporting large number of RIII cases (i.e. upto 25% of the total tested cases of 35-40) alternative drugs like Sulpha-pyrimethamine combination have been recommended as per the drug policy of 1981. These areas are in the states of Assam, Orissa, Maharashtra and Uttar Pradesh.

- Quinine tablets and injections are reserved for the treatment of complicated cases of malaria such as cerebral malaria @ 10 mg/kg bd.wt day for 7-days.

- Analytical comments

Since the inception of monitoring of chloroquine resistance P.falciparum in 1978, upto 1993, drug resistance to chloroquine has been detected in 222 PHC in 24 states/UTs. Out of these, 100 PHCs of 65 districts in 17 states reported RIII level of resistance. Average RIII level of resistance is about 3.5%.

Trend of P.falciparum to chloroquine strains shows steady increase of RIII level of resistance especially since 1987.

- Recent studies have also indicated 2-3 scattered cases of RII and RIII foci in Karbi-Anglong districts (Assam) and Changlong district (Arunachal Pradesh) against sulphadoxine plus pyrimethamine combination which is a second line of treatment.

4 (d).

4(D) VECTORS AND THEIR BIONOMICS

There are nine vectors of malaria in India namely, Anopheline culicifacies, A.stephensi, A. fluviatilis, A. philippinensis, A. dirus, A. sundaicus, A. minimus, A. varuna and A. annularis. The former seven species are primary while the last two are secondary vectors of local importance.

A. culicifacies is responsible for transmission of malaria in rural areas throughout the country except the northeastern states and Islands. This mosquito breeds in great variety of waters with high densities during August September and is known to be indoor rester and zoophilic.

A. stephensiis vector of urban malaria in the country and is container breeder besides breeding in fresh water collections in and around the house premises. It feeds indiscriminately on human and cattle mostly during early morning hours and is endophilic.

A. fluviatilis is a vector of malaria in hill and foot hill areas, breeds preferably in clean water slow moving streams with grassy margins. The plain group is endophilic and zoophilic while the hill group is anthropophilic and exophilic.

Analytical Comments

Spraying of insecticides (DDT, BHC & MAL) reduce the density & longevity of vector mosquitoes which results in interrupting the transmission. The per man density and man mosquito contact are reduced. The spraying gives epidemiological impact in terms of containment of malaria cases, lowering of Annual Parasite Index and reduction in slide positivity rate & also elimination of mortality due to malaria.

A.philippinensis is known to be vector of malaria in Assam and West Bengal. It breeds in clean water exposed to sunshine and is anthropophilic and endophilic.

A. minimus is vector of malaria mainly in foot hill region of Himalayas and north eastern states. Its breeding habit is similar to A. fluviatilis. This species is highly anthropophilic and endophilic.

A.dirus is known malaria vector in northeastern region of the country having highly exophilic and highly anthropophilic habit. This mosquito breed in streams and burrowpits in forested areas.

A. sundaicus was a known vector of malaria in Orissa, deltaic region of West Bengal and Andman and Nicobar Islands but during recent years, it is not being reported from Orissa and West Bengal and is found in high numbers in Andman & Nicobar Islands. It is only vector which breeds in brackish water.

A. varuna is vector in Jeypore hills (Orissa), Vishakhapattanam (A.P.), Singhbhom hills (Bihar), Kerala and Madhya Pradesh. It breed in a variety of breeding grounds including slow moving streams. It is known to be endophilic and anthropophilic.

A. annularis is widely distributed throughout India, it is vector of local importance in Orissa, Vishakhapattanam (A.P.) and Jhansi (U.P.). This mosquito is Zoophilic, endophilic and endophagic in

habit.

ADULT MOSQUITO VECTOR RESISTANCE TO INSECTICIDES

a. CULICIFACIES:- This species is triple resistant (DDT,BHC and Malathion) in 8 states and 1 UT (71 districts) involving 141.1 million population; Double resistant (DDT and BHC) in 16 states and 2 UTs (233 districts) involving 598.6 million population. single resistant (DDT) in 18 states and 2 UTs involving 730.4 million population.

A. stenphensi:- This mosquito is triple resistant in 3 atates and 1 UT (8 districts) having 24.6 million population. Double resistant in 6 states and 1 UT (27 districts) having 79.0 million population, single resistant in 7 states and 1 UT (34districts) having 92.0 million population.

The other species like A. fluviatilis, A. dirus, A. sundaicus, A. minimus are susceptible to conventional insecticides.

STAFFING PATTERN IN ENTOMOLOGICAL SECTOR IN INDIA

Under Modified Plan of Operation, there are 72 entomological teams consisting of one Assistant Entomologist, two Technicians and two Insect collectors posted at Zonal offices in 17 states in the country. A Zonal team has to monitor the vector density, vector bionomics, susceptibility status, bio-assay tests etc. in problemetic areas. At state headquarter level, the State Entomologist is supervising the Zonal teams. He review the entomological reports and give feed back to Directorate of National Malaria Eradication Programme at national level.

The 16 Regional Offices for Health & Family Welfare (govt. of India), each having one Asstt./Dy.Director Entomology, two Insect Collectors & Lab.Technicians help the states in vector surveillance and monitoring & vector responses to intervention measures both in rural and Urban areas.

5. Malaria control activities

(a) Surveillance:

The objective of surveillance in MPO is to screen fever cases, to collect blood smears from such cases and to detect malaria positive cases. Under Modified Plan of Operation at least 10% of population is screened in a year (ABER).

The epidemiological surveillance activities were on vertical pattern through unipurpose peripheral worker under NMEP till 1977. From 1.4.1977 surveillance is done through Primary Health Care system, each MPW has been allocated a population of 5000 in plain area and 3000 in tribal areas. The periodic domiciliary activities of surveillance are required to be carried out on fortnightly basis. MPWs females are also instructed to collect blood smear from fever cases reported to their sub-centers. There are 2 types of surveillance mechanism i.e. active and passive agencies.

Active Surveillance

The active case detection is continued on fortnightly basis through the MPWs. In the areas where incidence is high and inaccessible the community is motivated to set up drug distribution centers and fever treatment depots with the help from the local health authorities.

Passive surveillance

Blood smears are collected from patients with fever who report to the recognised agencies like hospitals dispensary etc.

The activities being undertaken in the surveillance programme in time and space are given in above.

Parameter used

To judge the efficiency of surveillance, **ABER (Annual Blood Examination Rate)** is the parameter currently mused. Minimum proposed ABER is 10% of the population in a given area in a year.

The parasitological load in the community is measured in terms of **Annual Parasite Incidence (API - No. of malaria positive cases per thousand population per year).**

AFI (Annual Falciparum Incidence per thousand population per year). This is expressed as proportion of total number of blood slides positives for Pf infection in the population under malaria surveillance.

SPR (Slide Positivity Rate)

This parameter is less dependent on case detective mechanism (ABER). Wherever the case detection mechanism is inadequate, this parameter is concerned for determining the progress of containment measures and give information on parasitic load in the community.

SFR (Slide Falciparum Rate)

This parameter also is dependable where case detection is poor both in terms of space and time. This parameter indicates the Pf predominance in the area.

There is no organised system for monitoring of epidemic risk. But however, a watch is kept on the blood slide collection and the positivity for malarial parasite. Any unusual increase in either of the two a detailed investigation including epidemiological and entomological is undertaken.

The surveillance machinery is hampered because of the inadequate frame work of primary health care as MPW is loaded with other work besides malaria. Consequently several villages may not be visited for a long time. In addition population movement, projects construction, labour camps, urban slums etc. are not effectively covered by surveillance.

(b) Disease Management:

The National Drug Policy for control of malaria is given in the Annexure-1

Early diagnosis and prompt treatment is attained by domiciliary visits by Multipurpose worker,who detects any fever case and gives the presumptive treatment.To increase the outreach of malaria control activities educated members of the community act as DDCs/FTDs and thus provide drug at the doorstep of the fever patient.

The first referral center for a malaria patient is the primary health center,and then community health center,subdivisional hospitals,district hospitals and medical colleges etc.There are private institutions mostly available in urban areas also act as referral units.

Regular monitoring of drugs resistance is carried out by 13 Pf monitoring teams spread throughout India. The drug resistance studies are carried out on priority basis in areas reporting therapeutic failure to the commonly used drugs, in areas of malaria outbreak and areas having sudden inflow of population.

(c) Disease prevention

Criteria for introducing or withdrawing house spraying:-

Under Modified Plan of Operation the Annual Parasitic Incidence (API) per thousand population is the main parameter for spraying the area. The areas with API 2 or more are sprayed with conventional insecticides. The susceptibility status data of the vectors and epidemiological data for last 3-5 years are reviewed by the experts (Technicl Advisory Committee) for suggesting the change of residual insecticides in a particular area. If the area (section) is having API less than 2 for 3 consecutive years and there is convincing evidence of a good surveillance in the area, the insecticidal spraying is withdrawn and for vector control bio-environmental measures are taken.

Method in determining the time of spraying:-

The timing for insecticide spraying is determined as per the transmission season in that particular area or state.

Smallest unit of spray coverage:-

The smallest unit for spray coverage is 'section/sub center of primary health center.

The costing calculation (in Rupees) per thousand population per cycle is shown below.

Name of insecticide	dose	Per capita expenditure	per thousand
DDT	1gr/m2	Rs. 8.7	Rs. 8700
BHC	200mg/m2	Rs. 9.1	Rs. 9100
Malathion	2gr/m2	Rs. 34.4	Rs. 34400

Other methods of vector control used:-

Other methods minor engineering, environmental sanitation, introduction of larvivorous fish and application of chemical larvicides etc.

6. Community participation in Malaria control activities

National Malaria Eradication Programme involves the community in detection and treatment of fever cases. Educated members of the community like School Teachers, Post Master, local leaders are involved to act as Fever Treatment Depot. Recently Aanganwadi workers of the ICDS scheme has been involved in this process.

During the spraying operation intensive health education

campaign are carried out to achieve co-operation of the community in getting their house sprayed - to be present in the house while spraying, to allow spraying in all the rooms and co-operate with the spray staff.

In the future it is contemplated to involved the Panchayat members, volunteer organisation, tribal development projects and local leaders be involved in deciding the anti-malarial activities which the community can implement themselves. It is being encouraged that schools be actively involved and guide in reporting of fever cases so that an unusual increase in fever incidence can be detected so that an unusual increase in fever incidence can be detected at the earliest. community involvement will also be sort during outbreaks of malaria in deciding the methodology to be adopted for delivery of goods.

To effectively involve the community their cultural believes, needs and priorities are to be analysed. For this anthropological/behaviour/social studies are contemplated. These studies will help in shaping the methodology to be developed for community participation.

7. Inter Sectoral co-operation

Inter sectoral and Intra-sectoral co-operation has not been attempted in organised way. However, an attempt is being made to actively involve various sectors like, irrigation water supply, urban development, municipal drainage etc. for effective control of malaria.

Recently held technical advisory committee of NMEP has suggested the making of Inter Ministerial committee at the center and at the state to ensure active collaboration of the various sectors that have been promoting malariogenic potential. At the district level a district committee should be formed that the allied sectors so as to actively control malaria. For the control of malaria it is necessary that malaria control measures be integrated in the general planning and administration of various projects create mosquitogenic conditions.

8. Inter country Border Activities on Malaria are not being taken up at the moment, which were regularly being done in the past. Recently as per the letters received from WHO the Activities including proposal for communication to various border countries of South East Asian Region are proposed to taken up afresh. New proformae have been received from WHO and sent to concerned to Bordering states of India for collection of information which will be communicated to various countries through WHO.

.9. MANPOWER AND STAFF TRAINING :

Core group staffing at central level and training

The Dte. of NMEP has a research and training division, leaded by a public Health Specialist (Dy,Director) and supported by office assistants.

- Coordination of all training is carried by the R&T Division.

- Faculty for training is drawn from other specialists and experts in the Dte. of NMEP other institution such as NICD, MRC, NIHFW, Medical colleges Hospitals and retired senior malariologist.

- Other integrated/supporting staffing outfit.

- For training of staff below the district faculty is drawn from the state programme manager, Regional offices of Health and F.W. and also dte. of NMEP.

- Training to microscopist is provided by ROHFW and PHC Medical Officers and peripheral staff by state Health and family welfare training centre.

- Various training courses held at different levels and the number of different categories of staff trained in the last 3 years.

A total of 46 training courses were conducted during the last 4 years (1991,1992,1993 & 1994), in various malaria related fields like Malariology, Entemology and laboratory aspects etc, and a total of 1014 candidates drawn from different levels were trained. The details are as under -

- Training conducted by NMEP till date are as under:

S.No.	Course	Date	Venue	No: Participants
1.	MALARIOLOGY	25.2.91 TO 5.4.91	NMEP	33
		11.11.91 To 20.12.91	NMEP	25
		24.8.92 To 1.10.92	NMEP	16
		15.2.93 To 26.3.93	NMEP	22
		15.11.93 To 24.12.93	NMEP	17
		05.09.94 To 14.10.94	NICD	28
		26.09.94 To 04.11.94	NMEP	7 (SAARC Countries
2.	ENTOMOLOGY	26.12.90 To 15.2.91	NMEP	23
		2.11.92 To 24.12.92	HOSUR	21
		17.11.93 To 12.1.94	HOSUR	22
3.	PHC MO's	18.11.91 To 21.11.91	NAGPUR	22
		27.11.91 To 30.11.91	BHUBANESWAR	23
		23.12.91 To 26.12.91	MALDA	27
		14.1.92 To 17.1.92	AIZAWL	25
		5.3.92 To 6.2.92	JAGDALPUR	19
		20.10.92 To 23.10.92	RAMESWARAM	30
		3.11.92 To 6.11.93	JODHPUR	18
		19.1.93 To 22.1.93	ALLAHBAD	27
		16.11.93 To 19.11.93	AGARTALA	30
		28.12.93 To 31.12.93	DHENKANAL	20
		21.12.93 To 23.12.93	TINSUKIA	35
		11.1.95 To 14.1.95	BYRNIHAT MEGHALAYA	25
4.	TRAINING	26.2.90 To 2.3.90	NMEP	15
		3.9.90 To 7.9.90	NMEP	22
		4.2.91 To 8.2.91	NMEP	17
		7.10.91 To 16.10.91	SHIMLA	23
		12.10.92 To 16..10.92	NMEP	22
		1.11.93 To 5.11.93	NMEP	26
		9.1.95 To 10.1.95	ASSAM	28 DMOs
5.	WORSHOP MNGT.OF MALARIA	8.11.91 To 19.11.91	BASTAR	26
		3.1.92 To 4.1.92	SURAT	16
		28.1.92 To 29.1.92	UDAIPUR	27
		11.2.92 To 12.2.92	RML, DELHI	42
		24.9.92 To 25.9.92	BARODA	20
		11.1.93 To 12.1.93	BHOPAL	17
		4.11.93 To 5.11.93	PANJIM	25
		4.11.93 To 5.11.93	VISHAKAPATNAM	25
		20.1.94 To 21.1.94	WARRANGAL	31
		25.3.94 To 26.3.94	AMRITSAR	26
		22.8.94 To 23.8.94	KAKINADA	22
		6.12.94 To 7.12.94	AIZAWL	24
		18.1.95 To 19.1.95	GUWAHATI	20

6.	MICROSCOPIST 4	20.7.92 To 22.7.92	NMEP,DELHI	
		27.7.92 to 29.7.92	NMEP, DELHI	
7.	REORIENTATION OF PFMT ROs	10.2.92 To 19.2.92	NMEP, DELHI	12
8.	ORIENTATION TRG. OF CHEB DHE STUDENTS.	15.5.94 To 13.5.94	NMEP, DELHI	

Training Requirements including detailed plan for future training in the light of global malaria control strategy

TRAINING NEEDS:

FOR MALARIA, KALA-AZAR AND JAPANESE ENCEPHALITIS:

1.	At State level;	State programme officers	30
		Entomologists	19
2.	Zonal level	Zonal Malaria Officers	78
		Entomologists/Asstt.Ent.	86
3.	District level	Distt.Malaria Officers	412
		Asstt.Malaria Officers	412
4.	PHC level	Medical Officers	14609
		Health Inspectors/Asstts.	28538
		Laboratory Tech.	14609
		Male MPWs	102674

FOR FILARIA AND URBAN MALARIA SCHEME:

Medical Officers/Biologists	230
Filaria Inspectors	840
Laboratory Technicians	280
Insect Collectors	840
Superior Field Workers	1680
Field workers	8400

TRAINERS TRAINING:

1) Central; Regional Office for Health and Family Welfare;

Regional Directors	17
Medical Officers/Epidemiologists	17
Entomologists	16

2) Regional Filaria Training and research centers and K.A. Training Center:

Assistant Directors	4
Medical Officers	4
Entomologists	8

3) State Health and Family Welfare training centers:

Principals	54
Medical Lecturers	54

In addition to the above training requirement, orientation to the disease epidemiology and control is required to be given to;

1. Engineers concerned with urban development, water resources and industrial projects.

2. Officers of Municipalities, armed forces, mining, irrigation, agriculture etc. and

3. Personnel of General Health Services and administrators.

4. Health Educators

5. Health Volunteers.

TRAINING SCHEDULE:

	COURSE	DURATION	PARTICIPANTS
1)	Malariology	6 weeks	District malaria officers and officers of allied organisations
2)	Entomology	8 weeks	State entomologists and officers of allied organisations.
3)	Trainers	5 days	Key trainers of RHFWTC, State Programme officers and Regional directors and officers.
4)	PHC Mo's	4 days	PHC medical officers.
5)	Workshop on management of complicated malaria.	2 days	Clinicians of hospitals.

6) Workshop on Bio-environmental methods of vector control.	3 days	State and central PWD and irrigation engineers.

COURSE CONTENTS:

The course modules are developed keeping in view the needs of the programme for effective implementation of its strategy. Apart from lectures on each topics the participants are also exposed to field conditions for proper comprehension and understanding of the problems and means to solve them. Laboratory based demonstrations and practicals are also conducted to strengthen the skills and capabilities.

Comments on adequacy and recommendation for improvement

1. Physical infrastructure at the Directorate is inadequate and has to be strengthened.

2. The Training Division is required to be strengthened with full compliment of manpower.

3. The core group of trainers at National and the State level has to be trained.

10.. Health education practices in Malaria control programme

The activities are being undertaken through the following:-

a. Inter Personal Communication through field worker/multi-purpose workers during their domiciliary visit and health supervisors/Medical Officers during several community meetings.

b. One minute quickies have been prepared in various regional language and has been despatched to various states for the purpose of Broadcasting under All India Radio and Doordarshan.

c. Pamphlets/Book-lets/Hand outs in English/Hindi and other regional language have been printed both by Dte. of NMEP and various state health Department and are distributed in communities and particularly under epidemic situation and high malaria prone areas.

11. Field Research

Findings of various researches undertaken through and by Dte. of NMEP are under consideration for implementation which are as under:-

PARASITE

1.	Anti Malaria Drug Trials	Indicated growing resistance to Chloroquine and Sulfa-Pyremethamine Mefloquine and Halofantrine are sensitive - Artemesinine under trial.
VECTOR		
2.	Impregnated Bednets	Feasibility trial indicated significant impact.
3.	Bio-environmental methods	Industrial projects-Reduced effectively mosquitogenic conditions.
4.	New Insecticides trials	Synthetic pyrethroids found effective and safe.
5.	Bio-larvicides trials	Interim reports suggest effectvie in reducing mosquito density.

12. Logistics

Approx. annual technical requirement of insecticides and anti-malarial drugs are as under:-

Sl.No.	Name of Insecticide	Quantity	Cost in (Rs.in Lakhs) (Approx)
1.	DDT (50%)	15964 MT	9757
2.	BHC	13487 MT	2562
3.	Malathion	14436 MT	4764
4.	Chloroquine (Tab)	4050 Lakhs	1890
5.	Primaquine 2.5 mg.	60 Lakhs	7
6.	Primaquine 7.5 mg.	290 Lakhs	66
7.	Amodiaquine	100 Lakhs	35
8.	Quinine (Tab)	20 Lakhs	16
9.	Sulpha pyremethamine	25 Lakhs	56

Provision for emergency needs of drugs and insecticides for amount of Rs. 867 Lakhs to be kept being 5% of the total cost of the above items.

13. Cost-analysis

(Rs. in careers)

Years	Insecticides/Larvicides	Drugs	Others	Total
1991-92	47.85	9.86	14.67	72.38
1992-93	59.62	8.22	9.96	77.80
1993-94	75.98	11.7	3.68	91.36

14. DECENTRALISATION -

National Malaria Control Programmme is a horizontal programm implemented through out the country through Primary Health Car system . With the implementation of Modified Plan of Operation decen tralisation process is on .

In decentralisation process development of proper infrastru ture and restrengthening of existing infrastructure need to be don so that it would be able to carry out activities.

Logistic management and spray operation planning is being don at District Head Quarter . Spray squads remain at the district an function vertically from there.

Microscopes have been decentralized to PHC level. In high endem- ic areas one lab technician is posted specifically for malaria work.

PHC Medical Officer is overall incharge for antimalarial activi- ties in the PHC. Spray activities are also supervised by him in his jurisdiction.

Surveillance activities have been integrated with general health services carried out by Multipurpose Workers .

DDCs and FTD are manned by Village Health Guide \Panchayat Member and other volunteers from the community.

NEW APPROACHES -

Stratification of areas based on various ecological and epidemi- ological parameters is going on in phased manner for effective utili- sation of resources.At present some new parameters related to malario- genic potential are under consideration of the Expert Group.

Intensification of antimalarial activities in the tribal areas with additional inputs has been commenced with 100% Central assistance to 7 N-E States w.e.f.1st December 1994.

New approaches for intensification of malaria control in urban areas and project areas are under the formulation by a Expert Group.

Identification of component /activities to be decentralised at various level is under the process.

Criteria for de-marking Hard core areas in the urban and project ares for prioritization is under the formulation.

To improve monitoring simplified formats of reports and returns for restrengthening of MIS is under the concluding stage of field trials.It is also being explored to hook MIS with NIC Net.

To improve mobility for proper supervision and effective implementation of programme vehicles have been sanctioned out of extra-budgetary provision and being sent directly to needy districts of various States..

15. Monitoring and Evaluation

Activities and feed-back

The implementation of the programme is being regularly monitored with the help of reports received from the States and Union Territories. In addition, the Regional Offices for Health and Family Welfare send periodic appraisal reports based on which necessary follow-up action is initiated with the concerned states.

Technical Advisory Committee is constituted by the Ministry of Health and Family Welfare periodically to review the programme and to give necessary guidelines to the programme.

In addition, various Independent Assessment Committees and Indepth Evaluation Committees are also being appointed depending as per the need.

Changes envisaged

Certain changes like the introduction of synthetic pyrethroids in the triple resistant areas of insecticide resistance are being initiated as recommended by the Technical Advisory Committee's recommendations. The States and Union Territories have been requested to submit their Action Plans to incorporate these recommendations.

16. External assistance

World Health Organisation has assisted NMEP by granting funds for training, meetings, seminars and supply of material and equipments over two yearly. To tackle the problem of tribal malaria in the seven states of Andhra Pradesh, Bihar, gujarat, Maharashtra, madhya Pradesh, Orissa and Rajasthan, assistance of World Bank is being sorted.

17. Resume of major technical and operational problems and ways to overcome them as seen on a national level

The major technical and operational problems are:-

1. Vector resistance of insecticides.

2. Resistance of P.falciparum to commonly available of drugs.

3. Lack of Inter sectoral and co-operation.

4. Active community participation and health education need to be developed.

5. Lack of epidemiological skills at the district and PHCs level.

6. Large number of peripheral workers posts are not filled.

7. <u>Suggested measures to improve/overcome the problems</u>.

1. Development of the epidemiological skills by training and development of possible epidemiologcal cell at a district level.

2. Motivate community participation in anti-malaria activities by intensifying health education.

3. Inter sectoral co-operation to be achieved by forming Inter-ministerial committee and making malaria control integral and in built part of process.

1994 problems

reason — Heavy & prolonged rainfall inc'd mal pop
Deaths due to inadequate infrastruc

Action taken — investigns by central teams
- drugs made available in remote vills
-
-
-
- Hlth ed campaign
drugs

Dist machinery involved in sensitising Teachers, relig leaders, panchayats, 24 students, + [illegible] on need to [illegible]

WB
- 100/asst NC
- effective surveill : detection of fever cases presump radical Rx
- Drug outreach thro FTD DDC
- Mandatory hlth measures for dev projects — no legisln yet
- Hlth ed [illegible] involve — Training — Intersectoral coordin

EXECUTIVE SUMMARY

During the VIII Five Year Plan period, N.M.E.P. activities are proposed to be taken up based on the broad outlines of the Modified Plan of Operation with certain changes to gain maximum output with optimal utilization of resources.

In the plan, certain problem areas in the country have been accorded priority depending on various factors. First priority is given to tribal areas with very high occurrence of the malignant type of malaria (P.falciparum malaria). Next in the order of priority comes high intensity malaria rural & urban areas followed by developmental projects and epidemic/epidemic prone areas. Another thrust in the strategy is to protect high risk groups of population viz. infancts, pre-school/school children/pregnant women in all areas, slum dwellers in urban areas, labour population in project areas.

Different strategic approaches using conventional techniques such as insecticide spray, case detection and treatment will be taken up and innovative measures such as bio-environmental control, personal protection measures(use of impregnated mosquito nets) are contemplated.

In order to achieve these objectives, certain policy changes are required and the same are enumerated in the plan document. Fundamentaly these issues relate to the API criterion for insecticidal spray, funnding pattern i.e. 100% central assistance in tribal areas and 50:50 sharing basis in other areas, decentralisation of logistics to states.

With a view to increase the efficiency of the Dte. of N.M.E.P. to function as a technical apex body, certain organizational restructuring & strengthening is proposed during VIII Plan period.

The VIII Plan document presents the situation analysis, constraints in implementation of the programme, recommendations of experts' evaluation and of Central Council of Health & F.W., objectives, strategies, activities, inputs needed and financial implications.

VIII FIVE YEAR PLAN - POLICY-CUM-OPERATIONAL DOCUMENT - NATIONAL MALARIA ERADICATION PROGRAMME

1991-96

1. PREAMBLE

1.1 National Malaria Eradication Programme (NMEP) was launched in 1958 in India, when there was an estimated number of cases of 75 million with 1 million deaths. By 1965, all time low incidence of 0.1 million cases with no deaths was recorded. Thereafter, there was resurgence of malaria during late sixties and early seventies and by 1976, there were 6.47 million total cases and 0.85 million malignant cases of malaria - also known as P.falciparum malaria.

1.2 Government of India, taking cognisance of the resurgence, has launched a Modified Plan of Operation (MPO) on 1.4.1977.

1.2.1 Objectives of MPO

(i) Prevention of deaths due to malaria.
(ii) Reduction of morbidity due to malaria.
(iii) Maintaining on-going socio-economic developments.

1.2.2 MPO Strategy

Basis .. Incidence of cases per thousand population per year (API - Annual Parasitic Incidence).

On the basis of API, country was divided into two strata for antimalaria spray activities.

(i) Above 2 cases per thousand population in one year (above 2 API), where indoor residual spray with appropriate insecticide, active and passive surveillance and antimalaria activities through community members as volunteers such as school teachers, panchayat members, forest officials and community health guide (Community Health Guide Scheme was introduced in 1977) have been undertaken. To make available antimalarial drugs to the outreach areas volunteers known as Drug Distribution Centres (DDCs) and some of these volunteers to function as Fever Treatment Depots (FTDs), where blood smears are collected and presumptive treatment instituted.

(ii) Areas with less than 2 cases per thousand

population in a year (below 2 API), Epidemiological investigation of cases, focal spray, intensive surveillance through peripheral health workers known as active surveillance and through governmental health institutions like health centres, dispensaries known as passive surveillance. In addition, entomological observations to study the trend of disease potential.

1.2.3 India being a signatory of Alma-Ata declaration to achieve the goal-"Health for All by 2000 A.D.", has taken up as a policy of providing Primary Health Care delivery system to cater to the needs of every citizen for which Multipurpose Health Workers Scheme has been introduced. NMEP which was a vertical activity since 1958 has integrated into the Multipurpose Health Workers System from 1977.

1.2.4 Government of India introduced the Community Health Volunteers Scheme in 1977 in order to provide basic health services to all rural areas.

1.2.5 Government of India having realised the magnitude of malignant malaria (i.e.P.falciparum) to the extent of 0.85 million cases, especially in tribal and hilly areas, with Swedish Governments assistance provided additional inputs such as expert manpower, mobility, material, training capabilities through the P.falciparum Containment Programme (PfCP) since 1977.

2. SITUATION ANALYSIS

2.1. With MPO strategy, total malaria cases of 6.47 million andP.falciparum0.85 million during 1976 has been brought down to 2.18 million total cases and 0.65 million P.falciparumcases during 1984. The API has been reduced from 11.4 to 3.08 during the corresponding period.

2.2 To achieve the goal of "Health for All by 2000 A.D." physical targets have been set at 5 year intervals from 1981 to 2000 A.D. based on case incidence per thousand population per year (API).

Year	Target(API)	Achievement (API)
1981	4.60	4.11
1985	2.70	2.57
1988	-	2.08
1990	1.90	-
2000	0.50	-

(ANNEXURE 1 & 2 - MAP - API 1976 -1988)

2.3 During the VII Five Year Plan period (1985 to 1989), MPO strategy was continued to be adopted and there had been reduction in the API from 3.08 to 2.35. During this period, the population has increased from 730.54 million to 791.56 million. There has not been marked dent in the total number of malaria cases - 1.8 million cases in 1985 and 1.78 million in 1988 indicating that the positive cases have not changed proportionately to the population growth. The total and malignant malaria cases (P.falciparum) have been contained at the same level during the VII Plan period (1984-1988). Similarly deaths recorded were 247 in 1984 and 209 in 1988.

2.4. The States of Arunachal Pradesh, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Nagaland, Punjab, Tripura, Uttar Pradesh, West Bengal, Union Territories of Chandigarh and Delhi have shown a decreasing trend during the first four years of the VII Plan period, where the MPO guidelines were followed strictly.

(Annexure 3 & 4 - Incidence of total malaria cases and P.falciparum cases - 1984 - 1988).

2.5 Malaria outbreaks.

During the first four years of VII plan period, there have been malaria outbreaks in certain parts of the country example - during 1985 4 Primary Health Centres (PHCs) of Jalpaiguri District of West Bengal; during 1986 4 PHCs of Purulia and Cooch Behar districts of West Bengal; 3 PHCs of Nalbari district of Assam and Panaji town in Goa and during 1987 focal outbreaks in some PHCs of seven districgs of Madhya Pradesh - Dhar, Jabalpur, Barwani, Ujjain, Indore, Mandal and Rajgarh and also in Panaji town of Goa; during 1988 in two PHCs of Cachar district of Assam; Vadodara, Ahmedabad and Bhavnagar districts of Gujarat; in 4 PHCs of Manipur and Ramnad district of Tamilnadu and in Panaji town of Goa.

2.6 Urban Malaria Scheme

2.6.1 Scheme started in 1971 with the objective of effective control of malaria in urban towns with strategy of recurrent antilarval measures, case detection and treatment through malaria clinics.

By 1988, scheme has been functioning in 128 towns rotecting 69 million population in 19 states and

with DDT, Dieldrin and Malathion. Out of 263 districts in 13 States and 1 Union Territory, the principal vector A.culicifacies is found to be resistant to DDT. In 218 districts in 10 States and 1 Union Territory, this vecdtor is reported to be resistant to DDT and Dieldrin and in 62 districts in 6 States and 1 Union Territory, this vector showed resistance to DDT, Dieldrin and Malathion. Important urban malaria vector A.stephensi is reported to be resistant to DDT in 34 districts in 7 States and 1 Union Terriroty; to DDT and Dieldrin in 7 States and 1 Union Territory. The larval stages of the vector are still manageable with conventional larvicides in urban areas. The other vectors A.minimus, A.philippinensis, A.fluviatalis and A.balabacensis are susceptible to conventional insecticides.

Alternative insecticides - pyrimiphos methyl, cyefluthrine and deltamethrine have been found to be superior to conventional insecticides.. They are expensive and some of them are toxic.

2.9. Developmental Projects and Malaria.

2.9.1 In India, irrigated areas have increased from 22.6 million hectares in 1951 to 75 million hectares by the end of VII Five Year Plan period. Between 1951 and 1980, 205 major and 916 medium schemes were taken up for execution. During 1979 to 1984, 67 major and 156 medium schemes were taken up. Water logging has been observed to be responsible for mosquitogenic conditions. There has been large scale labour population movement disseminating malaria from endemic areas to non-endemic areas. Studies in Punjab and Haryana have shown that irrigation has led to increase in malaria incidence. Similarly the construction work of Dams, Canals have also contributed to malaria. Special mention can be made of Hirakund, Nagarjunasagar, Sileru, Srisailam in Andhra Pradesh; Hasdavebango, Gandhinagar in Madhya Pradesh and Sathonoor dam in Tamilnadu and a large number of projects in north-eastern states. During the VII Plan period, the latest example is Upper Krishna Project in Karnataka.

2.9.2 Industrial malaria

Large number of industries were set up during the past 3-4 decades like Steel and Iron, Thermal Power, Textile, Fertilizer, Coal and Mining, Oil Refineries, Cement, Locomotives - about 292 approximately . The industrial townships during developmental stage and later on have recorded high

incidence of malaria due to tropical aggregation of labour and also due to bad management of water supply and disposal of sewage creating mosquitogenic conditions. Some of the notable examples are Mirzapur Thermal Power Project in Uttar Pradesh- Madhya Pradesh border, Mathura Oil Refinery, a petro-chemical industrial complex; Visakhapatnam Steel Plant in Andhra Pradesh and Kribco Fertilisers in Surat district of Gujarat.

2.10 Setbacks during VII Five Year Plan

2.10.1 Financial

Inadequacy of funds as compared to technical requirement. Rs. 470 crores were required whereas the initial outlay was Rs.361.5 crores for the 7th plan (Rural land Urban).

2.10.1.2. Inability of some States to provide the matching share i.e. Orissa, Gujarat, Uttar Pradesh, Madhya Pradesh, Tripura, Bihar and Assam,

2.10.1.3. Funds not released in time affecting antimalaria activities as in Bihar, Manipur, Uttar Pradesh and Karnataka.

2.10.1.4. Spray operations were primarily affected due to financial constraints and non-release of funds but at the same time some states did not follow the prescribed schedules and lacked supervision.

2.10.2 Operational

2.10.2.1. Surveillance Operations

a) Lack of priority for the programme with inadequate attention to surveillance by multipurpose workers.

b) Prescribed fortnightly surveillance not being followed in many of the states.

c) Long time lag between collection of slides, examination and providing radical treatment to the cases.

d) Inadequacy of Laboratory staff thereby resulting in backlog of slides.

e) Inadequate supervision at all levels due to lack of mobility for supervisors to cover large areas.

f) Inter-State migratory population to the developmental projects contribute to dispersal of malaria cases.

g) Some states like Tripura, Pondicherry, Tamilnadu, have the problem of imigration from bordering(neighbouring) countries.

2.10.3. Administrative

2.10.3.1. Manpower shortage

a) Frequent transfer of State Programme Officers and posting of untrained officers as in Andhra Pradesh, Karnataka, Gujarat, Bihar, and West Bengal.

b) Vacancy of District Malaria Officers as in Bihar and West Bengal.

c) PHC-level

Medical Officer	...	18% vacancies
MPW Supervisor	...	12% "
Multipurpose workers	..	48% "
Laboratory Technician	.	16% "
Malaria Inspectors	..	8% "

3. PROGRAMME EVALUATION

An Expert Committee constituted by the Govt. of India with national and international experts under the Chairmanship of Dr. V.N. Rao, ex-Addl.Director General, Indian Council of Medical Research has evaluated In-depth the MPO strategy under NMEP in India and submitted report in Oct. 1985.

An evaluation of PfCP under NMEP was done by an Expert Committee under the chairmanship of Dr. Harcharan Singh, Adviser (Health) Planning Commission during January/Febnruary, 1989 and submitted the report to the Government.

3.1. Major recommendations ofIn-depth Evaluation of NMEP - Oct. 1985

3.1.1. Malariogenic stratificationof the country and development of 3 years strategy plan of operations for malaria control.

Directorate of NMEP has acquired a computer system during 1989 and has developed an epidemiological model of malariogenic stratification for Karnataka state with PHC as unit based on the variables like topography,

meteorological conditions, water bodies, vectors, parasite load in the community and other factors. The control strategy for each stratum will be worked out after field verification of the Laboratory model and the implementation is expected during the first year of VIII Plan period in Karnataka and the stratification of major problem states is expected to be taken up during the next 5 years.

3.1.2. Training in malariology and allied fields should receive highest priority under Directorate of NMEP by creation of Training Centres at national and state levels. Also high priority for training of PHC doctors on clinical and epidemiological aspects of malaria.

The proposal to start a Training Division at NMEP Directorate could not materialise. However, State Training Centres have been identified and training programmes for PHC Meical Officers, District Medical and Health officers, to physicians, paediatricians and obstetricians on case management, trainer's training of Regional Health & Family Welfare Centres, engineers of developmental projects have been taken up during 1988-89 by decentralisation of the training programme.

The training programme for State, Zonal and District Programme Officers of malaria are continued to be imparted at National Institute of Communicable Diseases (NICD) in collaboration with NMEP.

3.1.3. Plan of action to enlist active community participation and health education should be worked out jointly by Central and State Health Education, Directorate of NMEP and ICMR.

Based on the advice of Expert Committee on Health Education constituted by Govt. of India, video films and publicity material have been developed by the Directorate of NMEP.

3.1.4 Division of Planning and Epidemiological Assessment at NMEP Headquarters and State headquarters should be created.

The existing division of Assessment at NMEP Headquarters has been augmented with stratification cell to develop the Management Information System (MIS).

3.1.5. A Division of Operational Research and Development should be established in NMEP Headquarters

and Operational Research in NMEP and ICMR to be jointly planned and monitored.

An Expert Committee constituted by the Govt. of India of national and international experts has identified priority areas and submitted a report in October 1985. In the Directorate of NMEP, a division headed by a Deputy Director with 12 teams to monitor drug resistance of malaria parasite (P.falciparum) is functioning. Studies on persistant malaria transmission, relative efficacy of different insecticides, alternative drugs have been carried out during the VII Plan.

Feasibility trials of bio-environmental methods in rural areas as an alternative to conventional insecticides have been taken up by ICMR/Malaria Research Centre in different geographical locations.

3.1.6. To reduce continued dependence on insecticidal spray, environmental intervention measures to be executed through inter and intra-sectoral coordination as an integral and in-built part of Urban Development, Water Resource Projects, Rural Development Programme.

Based on bio-environmental studies in Kheda Project by the Malaria Research Centre, ICMR, extension to a district involving different sectors like fisheries, Social Forestry, IRDP, NREP, Irrigation, Urban Development has been proposed in 4 disticts of Uttar Pradesh and Kheda district in Gujarat during VIII Five Year Plan.

As a first step in this direction, Workshops for Developmental Project Engineers have been taken up in collaboration with Malaria Research Centre, ICMR.

3.2 Evaluation of P.falciparum Containment Programme under NMEP with SIDA's assistance - WHO-February,1989-recommendations

3.2.1 Immediate need to provide effective firm additional componants on regular basis of an additional component, should there be withdrawal of external assistance presumably in a phased manner with necessary coverage during interim period to ensure maintenance of the gains achieved under PfCP.

SIDA's agreement expired by 30th June, 1989 to support the operational component of the programme. SIDA, however, is continuing support to

A group of Entomologists constituted by the Directorate of NMEP brought out operational guidelines for the entomological teams.

3.2.8. Strengthening of Division of Research and Training at the Directorate of NMEP.

3.2.9. A Health Committee to be constituted at State level to examine all developmental projects from malarial point of view and accord clearance.

3.3. Recommendations of Central Council of Health & Family Welfare.

3.3.1. First Conference of Central Council of Health & Family Welfare - February 1988 Recommendations.

a) It is necessary to implement the Integrated Programme for Vector Borne Diseases and the Directorate of NMEP in consultation with State Govts. should implement such an Integrated Programme from 1.4.1988.

b) Taking into account the availability of Rs.75 crores allotted for the Malaria and Filaria Control Programmes and the need for implementing an integrated programme for vector borne diseases including Japanese encephalitis and Kala-azar, it is recommended that the following strategy may be adopted.

- To undertake insecticidal spraying operations in DDT/BHC/Malathion areas having API over 2 depending on vector susceptibilily.

c) To implement the integrated programme for control of vector borne diseases as a Category-II Centrally sponsored Scheme with the cost being shared by the Union Govt. and the State Govt. in equal proportions and by division of responsibility.

d) Effective action should be taken by the State/UT Govts. to remove the organisational and administrative constraints adversely affecting the control programme such as : -

- release of funds at appropriate time to facilitate the spraying during the transmission period.

- taking effective steps for supply and maintenance of vehicles and spraying

equipments.

- appointment of staff for spraying operations.

- filling up of vacancies of multi-purpose workers.

- ensuring adequate supervision of spraying operations to improve quality.

- Improvement in Annual Blood Examination Rate (ABER).

- In areas with Male Multi-purpose workers vacancies, temporary unipurpose workers should be engaged to ensure fortnightly surveillance in all the areas, later to be regularised after in-service training.

- Female MPWs, and VHGs (Village Health Guides) should be activated to collect blood slides.

- Adequate coverage of infants, school-going children and pregnant women.

f) Improvements in Lab.services

- PHCs with high ABER, two Malaria microscopists to be appointed.

- Additional Lab.technicians should be appointed where stool, urine and sputum examinations are undertaken.

- Lab. equipments as per norms to be supplied.

- One Sr. Technician for every 10 PHCs at district level to cross-check and superve PHC laboratories.

3.3.2. Recommendations of 2nd Conference of Central Council of Health & Family Welfare - February 1989.

a) The following actions to be taken the year 1989 :-

The present criteria of API 2 and above for coverage by spraying operations but priority should be given to hard-core areas especially P.falciparum areas, development project areas where deaths have occurred, areas with

epidemic potential and tribal hilly areas where malaria is persistent. In these areas State Govts. should intensify the surveillance activities by filling up the posts of peripheral workers.

b) Integrated Vector Control

The Council noted the field trials at Kheda district and other areas in the country conducted by Malarila Research Centre of ICMR and recommended that Integrated Vector Control Project may be implemented in a phased manner in one district each in the states of Gujarat, Madhya Pradesh, Uttar Pradesh, Bihar and Orissa, in consultation with MRC and the Directorate of NMEP.

c) Developmental Projects

The Council recommended that the State Govts.should have a high level inter-developmental committee to screen proposals involving major irrigation and developmental projects and ensure that the project authorities incorporate antimalaria components in the project during planning construction and in the maintenance stage. The engineers should be trained in antimalaria operations.

d) Urban Malaria Scheme

The Council recommended that stringent bye-laws should be introduced and implemented in all the cities/towns to provide safeguards against open storage of water and rectification of drainage system in problem areas.

e) Independent Appraisal of NMEP

To revive the Independent Appraisal of the NMEP in order to have uptodate analysis and to facilitate taking up timely corrective measures.

f) Inter-state border meetings.

All the Regional Directors of the Health & FW will organise inter-state meetings - one before the transmission and another after the spraying operations. If necessary with international cooperation.

g) For spraying acceptability by the community intensified health educational activities should be taken to create awareness in the community about the benefits and also supply diazinon for the bed-bug nuisance.

h) Surveillance

The Council recommended that the active surveillance through fortnightly house visits by the peripheral health workers and wall stencils as evidenced of the visits should be rigidly enforced by the states. Also stencil on the passive surveillance including establishment of malaria clinics in all the medical institutions making the institutions for supervision laboratory and personnel.

i) Mobility

The council recommended that during VIII Five Year Plan, replacement of old and unserviceable vehicles in a phased manner out of Govt. of India's 50% share in consultation with the state govts. be made.

j) Contingency Amount

The Council recommended that Govt. of India should increase the ceiling of contingency amount from Rs. 1.00 lakhs to Rs. 2.50 lakhs for a district with a population of 7.5 lakhs and above and difficult and hilly terrain district population less than 7.5 lakhs and Rs.0.75 lakhs for districts with population below 7.5 lakhs to meet the cost of transport of insecticides, drugs etc. rent, stationery, POL, maintenance of vehicles, maintenance of spray equipments and laboratory equipments etc.

4. VIII FIVE YEAR PLAN

4.1. Objectives

Immediate objective is to achieve effective control of malaria by adopting measures for strengthening control activities through PHC system and ultimate goal still remains to be eradication of malaria from the country.

Following are the specific immediate objectives :-

i) Elimination of deaths due to malaria.

ii) To reduce morbidity due to malaria especially in persistent transmission areas having low socio-economic groups of population such as tribal areas, urban slum areas & labour population in developmental projects with

special emphasis on protection of vulnerable groups of population e.g. infants, pre-school children, school children, pregnant women.

iii) To increase awareness of the community on problem of malaria and to ensure willing community cooperation in antimalaria activities.

iv) To involve identified non-health sectors in malaria campaign.

4.2. Though the MPO strategy (1977) has been accepted as well-conceived, the implementation has not been satisfactory due to various setbacks as observed by the indepth evaluation teams in 1985 and 1989. Based on the experts'opinion and Central Council of Health and F.W recommendations in 1988 and 1989, the strategic approaches have been formulated.

4.2.1. Concept

- Reduction of pool reservoir infection in the community by vigorous anti-parasitic measures supplemented by selective and effective insecticidal spray operations, source reduction measures through environmental modifications, use of biological agents as per the local situation through the intensive health education and enlisting active community co-operation and making efforts to get inter-sectoral co-operation.

4.2.2. Approaches

- Based on prioritisation of malariogenic areas of the country.

4.2.2.1. Tribal Areas - Tribal Malaria Action Plan.

A total of 54 million tribal population i.e.7% of country's total population is spread over 126 districts in 21 states and Union Territories with case incidence more than 2 per 1000 population in a year (during preceding 3 years - above 2 API) contribute 30% of total malaria cases and 57% of malignant type of malaria (P.falciparum) of the country.

The SIDA assisted PfCP has provided additional inputs for protection against malignant

variety malaria mostly in tribal areas from 1978 to June, 1989.

The Evaluation report of PfCP - Feb.-1989 strongly recommended additional inputs in these areas.

Surveillance

Reduction of malaria infection load especially malignant variety (P.falciparum) by active surveillance through trilbal malaria volunteers, one each for 1000 population, alongwith fortnightly visits by the health workers (MPW, male).

Passive surveillance through health centres, dispensaries, community members functioning as drug distributors and as blood smear collectors school teachers, forest officials, the personnel of Integrated Tribal Development Programme, Anganwadi workers of Integrated Child Development Services (ICDS).

Mass surveys, school surveys before and during active transmission season and treatment of all parasite positives. A special Combat Teams for each of one lakh population along with the regular surveillance staff.

Interruption of transmission through insecticidal spray.

Criteria

Spraying in areas with incidence of 2 cases & above per 1000 population in a year during preceding 3 years. An additional round of spray to interrupt perennial transmission in these high transmission areas.

Areas where insecticide has no role or has limitations and where people have already the habit of using mosquito nets, synthetic pyrethroids will be supplied free of cost especially to families with infants and pre-school children and in other tribal areas impregnated mosquito nets will be supplied.

Investigation of parasite resistance to drug, vector resistance to insecticides, screening of migratory population by the special Combat Teams. One Zonal Malaria Team of the States to be shifted to Tribal area.

Development of specific health education material to the Tribal population, holding mass contact educational programmes to create awearenes and to adopt personal protection measures.

4.2.2.2.Rural areas other than Tribal areas with case incidence 5 & above 5 per 1000 population in a year during preceding 3 years.

Population .. 120 million in 122 districts of 21 states and 4 Union Territories.

- To reduce parasite load in community

- Active fortnightly surveillance through MPW(Male). The MPW (Female) to collect blood smears in her headquarters.

- Passive surveillance agencies through all the health institutions including indigenous systems of medicines.

- Monitoring of parasite resistance to the antimalarials and vector resistance to conventional insecticides.

- PHC laboratories intensified supervision. One senior lab.technician to supervise the work load of technicians of 10 PHCs.

- To interrupt transmission -

- Indoor residual insecticide spray is the main stay.

- Health education of the community to create awareness about malaria problem to accept spray operations as a benefit, to seek treatment from health worker or a health institution.

4.2.2.3.Rural areas other than tribal areas below 5 cases per 1000 per year (low incidence areas)

- Emphasis of passive surveillance agencies, all health institutions to study trend and to institute prompt treatment after confirming diagnosis.

- Fortnightly active surveillance by the Male Multipurpose worker in his area and MPW(female) in her Headquarters.

- Blood smear collection to only clinically suspected cases and after parasitological

confirmation, radical treatment followed by case investigation to decide indigenous transmission or importation of cases.

- Augmentation of DDCs and FTDs so as to make the antimalarial available even in remote areas.

- Focal spray in 50 houses around the case. The Panchayat Members to take active part in supervision.

- Introduction of biological methods like using larvivorous fish and taking up environmental methods to prevent mosquitogenic conditions through non-health sectors at district and community development block level i.e. fisheries, social forestry, IRDP, Irrigation.

- Orientation of non-health sector manpower at block level and district level about bio-environmental methods through ICMR institutions.

- Longitudional entomological studies.

- Health education.

4.2.2.4. Urban areas (Urban Malaria Scheme)

- All towns of Urban malaria scheme will also attend to filariasis control wherever the two problems co-exist.

- Augmentation of source reduction methods and bio-environmental methods with inter-sectoral cooperation from Public Works, Roads and Buildings, Water Works and Drainage, Fisheries etc.

- All construction works in local body area statutory High Power Board with the Chief Executive as Chairman for clearance of works from malariogenic potential point of view and legal provision i.e. bye-laws framing and implementation to be taken up.

- Slum areas with poor socio-economic level of population - active surveillance through health workers to be introduced. Also malaria clinics with lab.facility for the slum areas. Insecticide spray operations in these localities are to be undertaken. Health education especially to this vulnerable group.

- Industries - screening by High Power Local Body Committee and bye-laws include penal provisions for defaulters. In-built antimalaria component for major industries in the towns to prevent mosquitogenic conditions and screening of the labour population and providing prompt treatment.

- Health education using the communication media like Radio, Television, Newspapers to encourage community to adopt personal protection and to prevent intra-domestic and peri-domestic mosquito breeding.

4.2.2.5. Development Project Areas

- Clearance of major social developmental projects like irrigation, hydro-electric by High Power Board at national and state level - Ministry of Environment being the nodal agency and the Directorate of NMEP at Central level and the State Programme Officer (Malaria) as the expert members at the time of submission of plans to examine the malariogenic potential and ensure provision of antimalaria component during the construction and maintenance stages of the projects.

- Adequate budget provision for health and sanitation and advanced antimalaria measures in the project areas.

- Training of health and non-health sectors personnel of the projects.

4.2.2.6. Epidemic/Epidemic prone areas

- Vigilance by peripheral health workers through fortnightly home visits. All fever cases at the time of visit or occurring in the preceeding 3-4 days, blood smear examination and treatment of positive cases.

- Focal spraying where indication of increasing trend of cases or threatened epidemic.

- Regular epidemiological, entomological, meteorological, population migration-monitoring by the district malaria organisation.

5. POLICY ISSUES FOR THE VIII PLAN PERIOD

5.1. FINANCIAL.

5.1.1. NMEP (Rural & Urban Malaria Scheme.

- NMEP will continue as Category-II Centrally Sponsored Scheme on 50:50 cost sharing basis between Centre and States towards non-tribal rural areas and the towns under Urban Malaria Scheme.

5.1.2 The present pattern of bearing the plan expenditure on regular staff of State, Zonal, District level - NMEP (Rural & Urban) will henceforth during VIII Plan be the committed liability of the State Govt under non-plan expenditure of the state.

5.1.3. Seasonal spraying staff cost will be shared between the Centre and the State on 50:50 sharing basis.

5.1.4. The regular staff of the Directorate of NMEP and Regional Office for Health and Family Welfare, Govt of India which is under Plan during VII Five Year Plan will go to Non-plan account during VIII Plan period.

5.1.5. Cent per cent of the expenditure for filling up of critical field posts of NMEP such as MPW(Male), Laboratory technicians, Malaria Inspectors at PHC level,Multipurpose Supervisors will be borne by Govt. of India.

5.1.6 The cent per cent cost of insecticides, drugs, material and equipment, vehicles and additional posts under Tribal Malaria Action Plan will be borne by the Govt. of India.

5.1.7 The entire sanctioned budget towards NMEP after vote to be placed at the disposal of State Health Secretaries in the beginning of the financial year to facilitate implementation of antimalarial activities as per schedule.

5.1.8. 5% of the total outlay under NMEP to be earmarked towards health education component.

5.1.9 Similarly, 5% of total outlay must be earmarked in all developmental projects and industries towards antimalaria component.

5.2. ADMINISTRAIIVE

5.2.1. All trained State Programme Officers, Zonal Malaria Officers, District Malaria Officers and one PHC Medical Officers and one PHC Medical Officer should be kept in position for atleast three years in the NMEP.

5.2.2. All vacant posts of MPW (Male) MPW

Supervisors, Malaria Inspectors, Laboratory technicians must be filled up during the first year of VIII Plan as per norm. The additional inputs under Tribal Malaria Action Plan like Malaria Combat Teams,Tribal Malaria Volunteers to be in position in a phased manner within 3 years.

5.2.3. One Zonal Team to be shifted to tribal area selected under Tribal Malaria Action Plan and one Zonal team to be shifted to state headquarters to strengthen the State Malaria Organisation.

5.2.4. Present 12 P.falciparum Monitoring Teams to study the parasite sensitivity to antimalarials should be regular component of the Directorate of NMEP.

5.2.5. All the Regional Directors of ROHFW should be public health qualified.

5.2.6 Mobile Epidemic Control Teams must be created in all defined epidemic/epidemic prone areas.

5.3. OPERATIONAL

5.3.1. Rural areas (Non-Tribal) with API 5 and above will during VIII Plan be given protection with insecticidal spray replacing the MPO criteria of 2 API and above. In tribal areas, the criteria of above 2 API will be taken for insecticidal spray operations.

5.3.2. Rural areas with API less than 5 will be provided with augmented case detection and treatment facilities such as DDCs and FTDs. The FTDs will be manned by school teachers, post masters, panchayat members, village health guides and others.

5.3.3. In tribal areas, the State Govts. will provide a regular spray component of malaria combat team consisting of one medical officer or biologist, one Laboratory technician and one malaria inspector with a driver and vehicle for investigations, cross-checking, supervision of antimalaria measures and containment of disease.

5.3.4. The Tribal Malaria Volunteers will be paid an honorarium of Rs.100/- per month covering a population of 1000 tribals to take up the surveillance, treatment and educational activity.

5.3.5. In Tribal areas, special co-ordination with Integrated Tribal Development Agency and

Integrated Child Development Services will be sought to involve in the antimalaria activities the peripheral workers like Anganwadi workers in ICDS.

5.3.6. In all Urban Malaria towns, surveillance mechanism for slum areas will be taken up.

5.4. LOGISTICS

5.4.1. Insecticides. The State Govts during VIII Five Year Plan will procure all the requirement of DDT 50% wdp, BHC 50% wdp, Malathion 25% including Malathion Technical and Diazinon with the technical approval of Directorate of NMEP. The Directorate of NMEP will procure and supply only imported DDT 75%. The qualitative analysis of insecticides will continue to be with the Directorate of NMEP.

5.4.2. Antimalarial drugs. All the antimalarials except Primaquine viz; Chloroquine, Amodiaquine tablets and injections, Sulpha-pyrimethamine combination and other symptomatic drugs like Paracetamol will be procured by the State Govts. during VIII Plan period. The Directorate of NMEP will procure only the imported Primaquine tablets and supply to the States.

5.4.3. Vehicles. The Govt. of India will procure the vehicles as per the requirement of the States and the existing mechanism of procurement by states will cease as most of the states have difficulty and the cost will be shared between states and centre on 50:50 basis.

5.4.4. Material and Equipment.

Sprayers, microslides, microscopes, pricking needles and stains will be continued to be procured by the State Govt. on 50:50 sharing basis.

6. OPERATIONAL PLAN OF MALARIA CONTROL

6.1 Active surveillance

- In tribal areas, in non-tribal rural areas, urban slum areas, developmental projects and industries with antimalaria component in existance and in epidemic prone areas fortnightly house visits by the MPW (Males)/surveillance staff to collect blood smears. In all the areas, MPW(Female) will attend to blood smear collection in her headquarters.

- In identified tribal areas with above 2 API, a tribal will be selected to act as a malaria volunteer for a population of 1,000 each for carrying out surveillance and treatment.

- Wherever ICDS is in operation, the Anganwadi worker will act as FTD. Where village health guides are provided each for 1000 population each, he will act as FTD. In other areas, school teachers, panchayat members, post masters, ITDA peripheral functionaries, forest officials will act as DDC or FTD - one for 1000 population depending upon their literacy level, collection of blood smears and treatment or only drug distribution.

- The norms of MPW (male) in plain areas, coverage of 5000 population and in tribal/hilly areas 3000 population will continue.

- Transport of blood smears collected to the laboratory twice a week. The executive instruction in operation for collection and trasport of the slides by MPW Supervisor twice a week on Wednesday and Saturday will continue. To reduce the time lag, especially in remote and tribal hilly areas, the tribal malaria volunteer will personally deposit the slides atleast once weekly at the PHC and collect reports of previous weeks to institute treatment.

- The State Governments will utilise the public transport system including transport of ITDA or any other welfare agency, pre-paid postal system for transport of slides to the laboratory from the periphery and also to give feed back to the peripheral worker.

- In islands like Andaman & Nicobar and remote hilly areas, results of the positive cases especially malignant variety (P.falciparum), the wireless communication of police or revenue to be utilised.

- Mass surveys, selected group surveys such as school children will be carried out in tribal areas before & during peak transmission period by the special malaria combat team of the PHC along with tribal volunteers, male Multipurpose Workers of the area under the supervision of the PHC medical officer/biologist.

6.2 Passive surveillance

- All Govt. Dispensaries, PHCs, Sub-Division/District Hospitals, Dispensaries of

indigenous system of medicine will continue to be the passive surveillance agencies.

- In developmental projects, dispensaries or hospital, in tribal areas, the existing health care volunteer agencies like mission hospitals and dispensaries will be identified to function as passive surveillance agencies.

- In addition to active surveillance in urban areas in VIII Plan, for 10000 urban slum population one surveillance worker and for 4 surveillance workers one Supervisor - for fortnightly slum visits.

- In urban areas, apart from governmental/municipal health institutions, voluntary health institutions with laboratory facilities will be identified to act as passive agencies.

- In identified epidemic prone areas, health institutions with laboratory facilities will be identified to act as passive agencies.

6.3 Laboratory Services

The present PHCs with a population of 1 to 1.5 lakh population has one Laboratory Technician for malaria and other pathological work and the process of opening of PHCs for 30,000 population is under way in many of the states. Laboratory facility in each of the PHC to be incorporated under Rural Health Division. Ten percent leave reserve of Laboratory technicians as per MPO will continue in VIII Plan.

- For tribal areas, one Laboratory Technician is provided in the VIII Plan in the Special Combat Team for cross-checking slides, for surveys, investigations.

- For the non-tribal rural areas of 120 million population in 60 districts with API 5 and above 5, one Supervisory Technician for one million population at district level will be additional functionary to cross-check and supervise the work of the PHCs. A total of 120 senior level technicians is the provision made in the VIII Plan.

- In urban malaria towns, one Laboratory Technician is provided for one lakh slum population to examine the slides collected by the surveillance worker. A total of 700 Lab. Technicians is the additional input during the VIII Five Year Plan for

a population of 70 million ujnder Urban Malaria Scheme.

6.4 Treatment

- Presumptive treatment with chloroquine will be given to all fever cases suspected to be malaria by all the peripheral health workers including the identified community health volunteers.

- Radical treatment wilh chloroquine and primaquine will be given to all the confirmed positive cases under supervision of Multipurpose Supervisor and in case Multipurpose Supervisor is not available by the Multipurpose Worker himself. All institutions including identified voluntary health institutions will provided with chloroquine and primaquine by the State Governments for radical treatment.

6.5 Spray Operations

- As per MPO 1977 API criteria, 380 million population has to be projected for insecticide spray operations in the first year of VIII Plan, whereas if 2 above 2 API of preceding three years 1986-1988 is considered, 265 million population needs spray coverage. For the VIII Plan, areas with maximum API in the preceding 3 years, will be the basis for projection of population under spray in the following year. The population projected for spray during first year will be as follows :

i) For tribal malaria control, above 2 API areas - 54 million population.

ii) For non-tribal rural areas above 5 API - 120 million population i.e. a total of 174 million population is projected for insecticidal spray coverage with appropriate insecticide.

For subsequent years in Plan period, maximum API of preceding 3 years will be considered. The projection of population has been worked out taking District as a unit.

One round addtional insecticidal spray will be carried out in tribal areas.

Focal spray - In all the non-tribal rural areas below 5 API, 516 million population is estimated.

Focal spray will be confined to a foci of 50 houses around a confirmed positive malaria case.

Spraying will be carried out exclusively in human dwellings with special attention to the coverage of living rooms.

7. Integrated Vector Control Activities

- During VIIIFive Year Plan, under S&T Mission Project, bio-environmental methods are proposed to be introduced in larger areas i.e. districts as a unit in rural areas 4 districts of Uttar Pradesh namely Shahjahanpur, Allahabad, Hardwar and Haldwani and Kheda district in Gujarat State based on the experience of Malaria Research Centre (ICMR) in Nadiad Taluka. In addition , in rural areas other than tribal areas with API less than 5, bio-environmental methods like introduction of larvivorous fish, development of social forestry, engineering measures for irrigation channels, rural water supply and sanitation through different sectors are proposed in a phased manner. MRC (ICMR) will give orientation training to the Block level and District level health sectors'functioneries. The District Malaria Officer with the help of Zonal Malaria Team will identify the situationsl where different sectors take part in engineering and other corrective measures.

- The districts identified and selected where bio-environmental methods will be introduced, the cost of insecticides and operational cost of the spray operations will be utilised for bio-environmental measures with a reserve insecticide for focal spray in emergent situations.

- In Urban areas, bio-environmental methods as source reduction measures are already in operation and the same will be continued with the involvement of sectors like fisheries, roads and buildings, Railways and industries as well as Water supply and Sewage disposal.

- Framing and implementation of bye-laws to prevent mosquitogenic conditions will be taken up in Urban Malaria Scheme Towns.

- In Tribal areas during VIII Five Year period in areas where indoor residual insecticide spraying has limitations, vulnerable, socio-

material.

- In Urban slum areas, surveillance workers and Inspectors will take up health education activities.

- MalariogenicStrafification.

- Epidemiological model for malariogenic stratification with variables like epidemiological, entomological, topographic and mateorological has been developed by the Directorate of NMEP and has been applied to Karnataka State stratifying PHC into different categories based on their malariogenic potential. The model is under field verification. It is proposed to take similar exercises during the yerar 1989-90 for 4 problem states in the country and during the VIII Five Year Plan period all the States are proposed to be taken up in a phased manner. As the process of stratification of States progresses, the strategic approaches will be defined for each strata for implementation.

- Management Information System.

- Monthly and annually epidemiological reports generating from PHCs will continue to be transmitted to the districts, states and the national level as per scheduled dates.

- Monthly Entomological Information from the Zonal Malaria Teams and ROH&FW Govt of India will continue to be transmitted from states to central level.

- During VIII Five Year Plan, it is proposed that the budget/expenditure information from the states will be transmitted to the central level quarterly within one month from the completion of the quarter.

10. P.falciparum Monitoring for Chloroquine and alternate drug sensitivity

- Drug resistance phenomena of P.falciparum (Malignant) type has been occurring in different parts of the country since early 1970s. Presently, there are 13 ad-hoc Monitoring teams functioning along with Headquarters component on annual basis The teams are conducting studies on Alternative drugs like Sulpha-pyrimethamine combination, Amodiaquine, Quinine and Mefloquine to detect and prevent spread of the resistant strain. Continuous monitoring is essential. As it has an

important direct beraring on the national drug policy of the NMEP with regard to use of first and second line of treatment of malaria case. Hence, it is proposed that in VIII Five Year Plan, the 13 Monitoring teams should be made an integral part of the NMEP.

11. Entomological Monitoring

- Presently, 72 Zonal Teams are functioning in different states to obtain scientific data periodically for carrying out spray operations and to know the vector behaviour amd susceptibility. During VIII Five Year Plan in order to strengthen the state level malaria organisation and in order to give thrust to the tribal areas, the states having more than one zonal team, shall have one at the state headquarters and the rest in hard-core areas and those who have only one zonal team will locate it at the state headquarters.

12. Training Activities.

- As per the staff sanctioned presently at state level, 30 State Malariologists, 19 Entomologists at Zonal level, 78 Zonal Malaria Officers, 86 Entomologists/Asstt.Entomologists, 410 District Malaria Officers and 419 Asstt. Malaria Officers are to be trained. Presently, NICD is imparting training for 6 - 8 weeks for these categories of staff. During VIII Five Year Plan period, it isproposed that apart from NICD, State Regional Training Centres will be identified for training of above categories of staff.

- At PHC level, 28860 Medical Officers are functioning and are to be given re-orientation training at State Regional Health & F.W Centres.

- Para-professionals of PHCs comprising of 28538 Health Inspectors/Health Assistants, 10091 Lab.Technicians are to be trained at 12 ROH & FW Govt of India during the VIII Five Year Plan period.

- MPWs, VHGs and CHVs sanctioned are proposed to be trained at PHC level during VIII Five Year Plan period.

- As recommended by the several Expert Commitees, a Division of Training is to be created in the Directorate of NMEP for planning, monitoring, evaluating the training programmes and also curriculum preparation as per needs of the

programme during the VIII Five Year Plan Period.

- To augment the training facilities at ROH & FW level during VIII Five year plan period, it is proposed to have one additional post of Public Health Specialist of grade-II.

- Training of the Personnel under Tribal Malaria Action Plan.

- For the specific job requirement in Tribal areas, the existing antimalaria personnel have to be re-oriented and the additional personnel like Tribal Malaria Volunteers and the personnel of Combat Teams need to be given training.

- The orientation of the state level, zonal level officers and officers of the Regional office for Health & FW Govt. of India will be done by the Directorate of NMEP officers at ROH & FW.

- The State Programme Officers will give orientation training to the District Malaria Officers at the State level. In turn, the District Malaria officers will train the PHC Medical officers at the district level. The PHC Medical Officer, in turn will give re-orientation training to the para-medical personnel. Staff from the Departments of ICDS, Tribal Development Project will be trained at differet levels along with health staff.

13. Research and Development.

- Research on malaria involves two aspects - one is basic and the other operational aspect, the former being carried out presently by ICMR institutions and some of the Medical Coleges and operational research by the Directorate of NMEP and ICMR. An Expert Committee in 1987 has identified areas on priority basis with regard to epidemiological, clinical, entomological, chemotherapeutic, control measures and managerial aspects of the programme. Presently, under the Directorate of NMEP, One Deputy Director, one Sr.Reserarch Officer and 14Reserarch Officers are the sanctioned posts attending P.falciparum Monitoring to chloroquine resistance. During VIII Five Year Plan period to undertake the field operational studies, strengthening of the reserarch and development division has been proposed. The Division will be entrusted with the responsibility of planning of operational research activities and

to co-ordinate research activities of other organisations pertaining to malaria and to see that the results obtained are incorporated in the control strategies of the programme.

14. Logistics

I YEAR OF THE VIII PLAN – INSECTICIDE REQUIREMENT

Population in "Million"
Quantity in "M.Tons"

Insecticide	Tribal 2 & >2 API		Non-Tribal 5 & >5 API		Non-Tribal API <5		Total
	Pop.	Qty.	Pop.	Qty.	Pop.	Qty.	
DDT	38	5700*	31	3100	516	2580	11380 or 8550(Tech.)
BHC	10	4480*	73	24528	–	–	29008
MAL	6	7200*	16	14400	–	–	21600
Total	54		120		516		

* For one extra round of spray, quantity included.

Central Insecticides Board, GovtofIndia has banned DDT in Agriculture and for Public Health, a ceiling has been fixed at 10,000 M.tons DDT Technical per annum. In VIII Plan, the ceiling laid will not exceed but with stratification exercise, phasing down of insecticide usage is aimed.

Synthetic Pyrethroid will be procured for impregnation of mosquito nets. Tech.Malathion for fogging during epidemics and Diazinon to mitigate bed-bug nuisance will be procured as per requirement.

14.2. Antimalarials

– The procurement of chloroquine per annum would be to the extent of 400 million tablets, Amodiaquine 20 Million tablets, Primaquine 7.5 mg. tablets 40 millon and Quinine sulphate tablets ..... million, Quinine dihydrochloride injections 0.15 Million ampoules, Sulpha-pyrimethamine tablets.1.5 Million Paracetamol 50 Million tablets.

14.3 Larvicides

In Urban Malaria Scheme, the procurement of

larvicides will continue as in the VII Five Year Plan and the Pyrethrum extract for space spray will also be procured. In the VIII Plan it is proposed that the states procure all larvicides and the centre will share the 50 per cent cost.

14.4. Vehicles

Mobility in the programme . In the Tribal malaria action plan during VIII plan, to cover 54 milion population, one vehicle for 0.1 million population provision is made. A total of 540 vehicles is to be procured by the Govt. of India as cent per cent central assistance.

- Under Urban Malaria Scheme, 53 towns have already been sanctioned and one vehicle for each town is proposed and out of the existing 128 towns, 32 towns will be provided one vehicle each as replacement, the cost of which will be shared on 50:50 basis between centre and the states.

- For hard-core (non-tribal above 5 API and tribal above 2 API) malarious areas under insecticide coverage, for each district the norm of supply of vehicles is one jeep, 2 trucks and one Pick-up van. There are 122 districts and 488 vehicles would be required. The replacement is 50% i.e. 244 vehicles during the VIII Plan period is proposed in a phased manner.

- In the remaining rural areas (API less than 5 in non-tribal rural areas) with a population of 510 million spread over 280 districts, it is proposed to replace one vehicle for each district i.e. 280 vehicles will be provided. The cost of the vehicles in hard-core districts and in other rural areas will be shared between centre and the states on 50:50 basis.

15. Organisational re-structuring

There has been no change in the organisational structure at the centre and the state levels since the implementation of Modified Plan of Operation. As it is proposed to bring about some changes in the operational strategy of N.M.E.P. it is imperative that there should be restructuring of existing organisational structure. Accordingly, the setup at the Centre will have 8 fully equiped divisions at the headquarter as listed below :

1. Division of Accounts & Administration.
2. Division of Planning, Assessment & Evaluation.

3. Division of Japanese Encephalitis & Kala-azar.
4. Division of N.F.C.P.
5. Division of Research, Training & Health Education.
6. Division of Urban Malaria & C.C.O.
7. Division of Public Health Engineering.
8. Division of Entomology and Chemistry.

Each division will be headed by a Deputy Director & assisted by Assistant Directors and Dy. Assistant Directors.

The following additional posts would be needed. One Deputy Director(FA), two Dy. Directors(Med.), three Asstt. Directors(M), seven Asstt. Director(Ent.), one Suptd. Eng., one Executive Eng. and two overseers. The additional expenditure on this account would be approx. Rs.10 lakhs per year.

(Existing and proposed organisational chartes are at Annexure 6 & 7)

In 21 states where Tribal Malaria Action Plan is to be implemented additional component of one State Epidemiologist, one Statistical Assistant and one Stenographer each would be provided.

At the peripheral level in Tribal Malaria Action Plan one combat team for 1 lakh population would be provided. The combat team consists of one Biologist, one Malaria Inspector, one Microscopist, one Driver.

In order to achieve better epidemiological inputs the existing zonal teams would be re-allocated in the states where Tribal Malaria Action Plan is taken up. Where more than one team is present one would be shifted to state head-quarters and others to tribal areas. If only one team is present it would be shifted to state headquarters.

16. Financial implications:

Existing strategy

Regular spray in API 2 and above areas based on the 1976 criterion. If this is implemented a population of 384 million will have to be covered every year under NMEP(Rural). Details of the financial implications are given in the Annexure 8.

In case the MPO strategy is applied and the spray operations are to be based on API criterion of 3 preceding years instead of 1976 basis, a

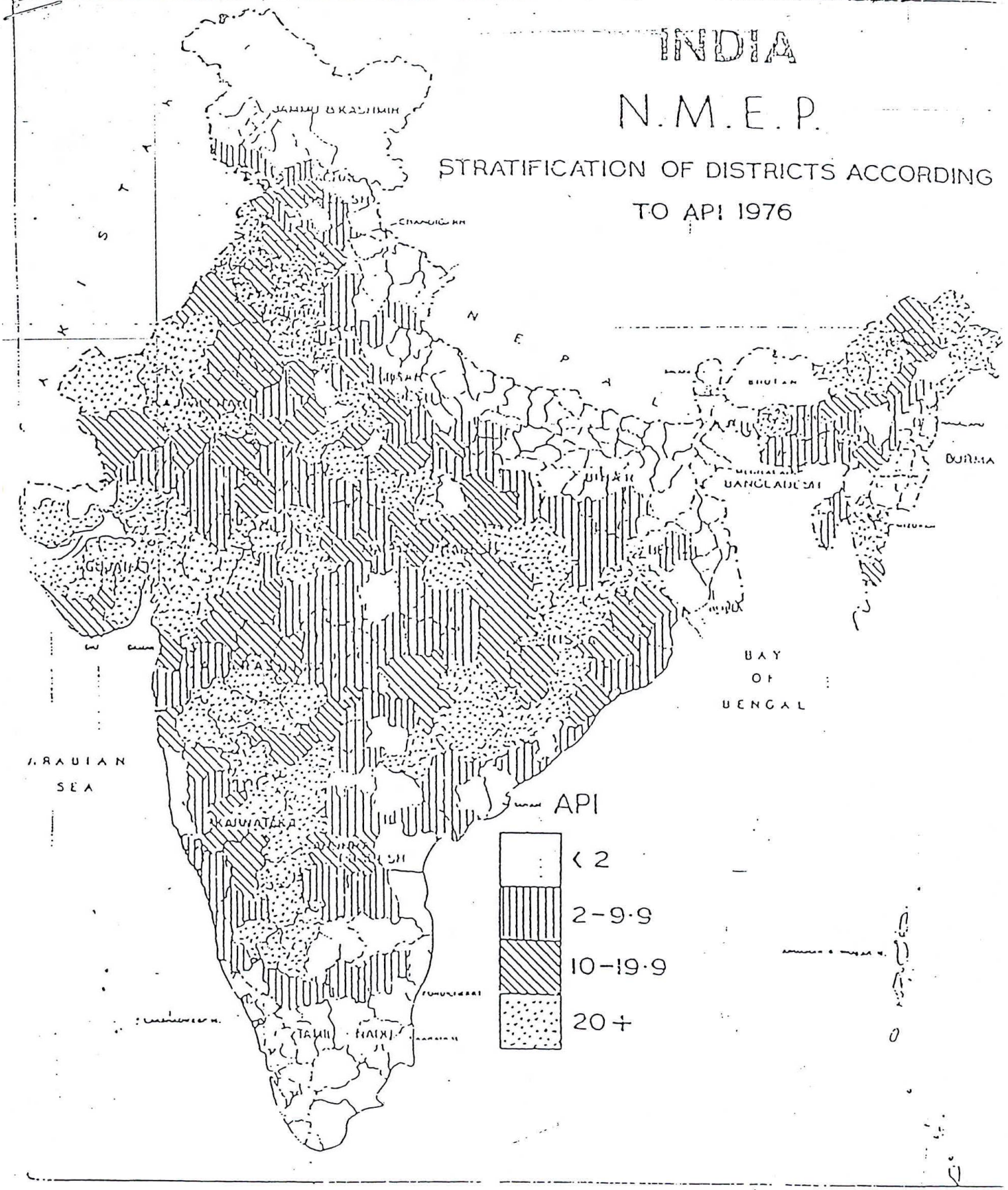
population of 265 millions have to be covered every year. Details of the financial implecations are given in Annexure 8A.

Proposed strategy

2 API & above in Tribal areas and 5 API & above in rural areas for insecticidal spray. If this is implemented, the population to be covered under insecticidal spray would be 54 million in Tribal areas and 120 million in rural areas. Detais of quantity of insecticides and financial implications for NMEP(Rural & Urban) are given in Annexure 9,10 & 11.

It is obvious from the above that the consumption of insecticides will reduced substantially resulting in savings on account of less procurement of insecticides as well as reduction in the spray wages. The savings thus obtained may be utilized for furnding the Tribal Malaria Action Plan on a 100% Central sponsoring basis. The Financial implications of Tribal Malaria Action Plan are given at Annexure 12.

ANNEXURE. I

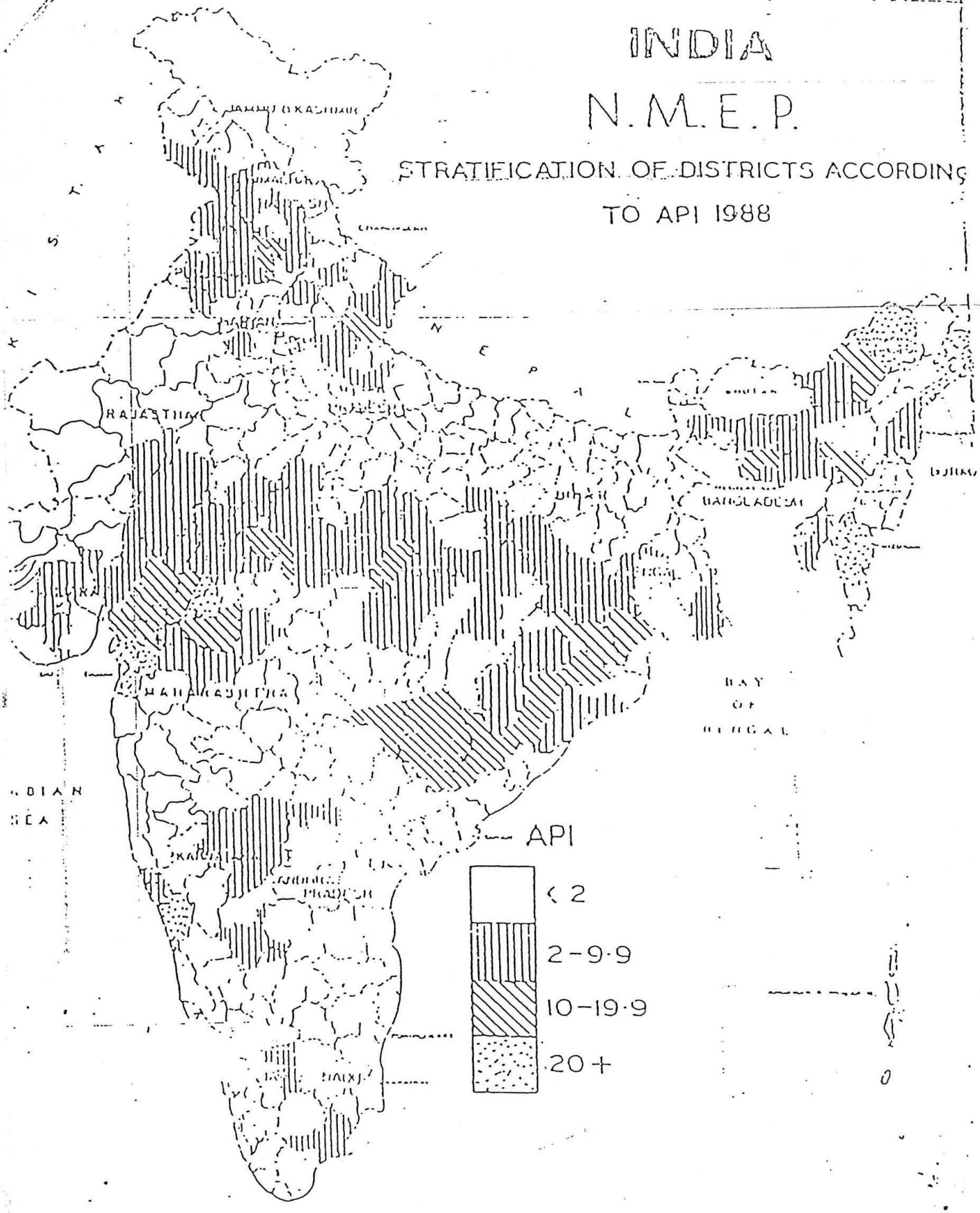

INDIA
N.M.E.P.
STRATIFICATION OF DISTRICTS ACCORDING TO API 1976
BHUTAN
BURMA
BANGLADESH
BAY OF BENGAL
ARABIAN SEA
KARNATAKA
API
< 2
2-9·9
10-19·9
20+

ANNEXURE 2.

INDIA

N.M.E.P.

STRATIFICATION OF DISTRICTS ACCORDING TO API 1988



Annexure – 3

Statewise Positive Cases of Malaria 1976 & 1984 to 1988

Sl. No.	Name of the state/ U.Ts./Others	1976	1984	1985	1986	1987	1988 *
1.	Andhra Pradesh	216154	46238	36814	28836	53010	61674
2.	Arunachal Pradesh	27934	28234	24896	21810	16959	19254
3.	Assam	148608	59678	61978	113135	63858	56225
4.	Bihar	78048	51376	48960	42463	32749	14562
5.	Goa	2012	112	80	433	4814	6732
6.	Gujarat	1214028	253552	139207	153562	274593	460683
7.	Haryana	736566	147160	10402	62575	18926	9237
8.	Himachal Pradesh	22110	27966	36478	42176	22460	10209
9.	Jammu & Kashmir	37839	18144	34026	41815	11540	4430
10.	Karnataka	634517	32293	39237	58119	88505	92488
11.	Kerala	5029	4735	38545	3382	3772	5147
12.	Madhya Pradesh	878693	145712	111631	165592	303033	306882
13.	Maharashtra	702155	91949	61825	47998	60557	84027
14.	Manipur	1208	1284	1166	1773	1084	1076
15.	Meghalaya	7035	15315	12560	14687	10975	11863
16.	Mizoram	11941	15056	16217	19116	15356	20030
17.	Nagaland	1609	5322	5163	6317	5000	3478
18.	Orissa	329106	283527	246223	316139	237310	266068
19.	Punjab	440465	216098	223756	174012	86604	33342
20.	Rajasthan	412776	101955	67040	54618	65523	87949
21.	Sikkam	113	27	57	45	24	23
22.	Tamil Nadu	103921	71320	71347	58741	55523	74303
23.	Tripura	7171	13126	8334	9318	8160	4570
24.	Uttar Pradesh	337728	419708	373006	228244	126181	134429
25.	West Bengal	28917	46340	46814	53620	46027	39782
26.	A & N Islands	1510	4054	3648	3276	3271	3360
27.	Chandigarh	10535	24292	37546	30723	19349	7731
28.	D & N Haveli	–	1640	2400	4150	5625	5845
29.	Daman & Diu	–	696	256	394	384	779
30.	Delhi	49330	38108	32556	26613	14112	14292
31.	Lakshadweep	103	3	1	2	3	1
32.	Pondicherry	325	545	274	224	220	309
33.	Coalfield	4266	493	559	548	283	126
34.	DNK Project	15465	17988	12451	7746	7045	–
	TOTAL	6467215	2184446	1864380	1792167	1663284	1780906

* figures provisional

Annexure - 4

Statewise figures of P.Falciparum cases in the country for the years 1976 & 1984 to 1988

Sl. No.	Name of the state/ U.Ts./Others	1976	1984	1985	1986	1987	1988 *
1.	Andhra Pradesh	19054	19124	14202	9931	21743	19382
2.	Arunachal Pradesh	10024	6142	5015	4156	3516	3007
3.	Assam	65177	38174	41857	80562	38241	34356
4.	Bihar	40955	31621	28149	26298	20245	8364
5.	Goa	122	1	3	2	16	287
6.	Gujarat	73674	29473	21952	34903	76158	158552
7.	Haryana	3755	18853	9397	2339	289	838
8.	Himachal Pradesh	3	792	659	324	65	39
9.	Jammu & Kashmir	9	260	1843	2063	206	378
10.	Karnataka	69900	3337	9630	16906	29582	26637
11.	Kerala	38	45	47	87	112	112
12.	Madhya Pradesh	155759	77332	54970	90688	142825	139379
13.	Maharashtra	39055	16621	13379	12957	23430	26950
14.	Manipur	530	804	690	904	353	439
15.	Meghalaya	4804	12403	9681	11618	7997	8478
16.	Mizoram	4701	8129	8338	10155	8048	8880
17.	Nagaland	961	1721	1377	2022	1563	919
18.	Orissa	210227	226279	195800	253011	191759	170845
19.	Punjab	479	40866	27316	13114	862	625
20.	Rajasthan	24163	20443	12643	13890	13942	21671
21.	Sikkim	6	2	7	3	0	2
22.	Tamil Nadu	4087	4724	4229	3398	3588	5143
23.	Tripura	5123	11581	6932	8053	7245	3815
24.	Uttar Pradesh	10798	63675	55010	19384	10496	9667
25.	West Bengal	1085	5761	10844	14096	9403	5385
26.	A & N Islands	62	489	677	537	633	782
27.	Chandigarh	4	1265	607	148	26	3
28.	D & N Haveli	-	19	25	161	270	349
29.	Daman & Diu	-	37	16	19	0	32
30.	Delhi	89	646	239	77	22	20
31.	Lakshadweep	0	0	0	0	0	0
32.	Pondicherry	5	6	6	8	4	1
33.	Coalfields	466	103	79	106	34	31
34.	DNK Project	7748	14726	9378	6356	5901	-
	TOTAL	753713	655454	545005	638276	618574	655638

* figures provisional

Annexure - 5

Statewise API for 1976 and from 1984 to 1988

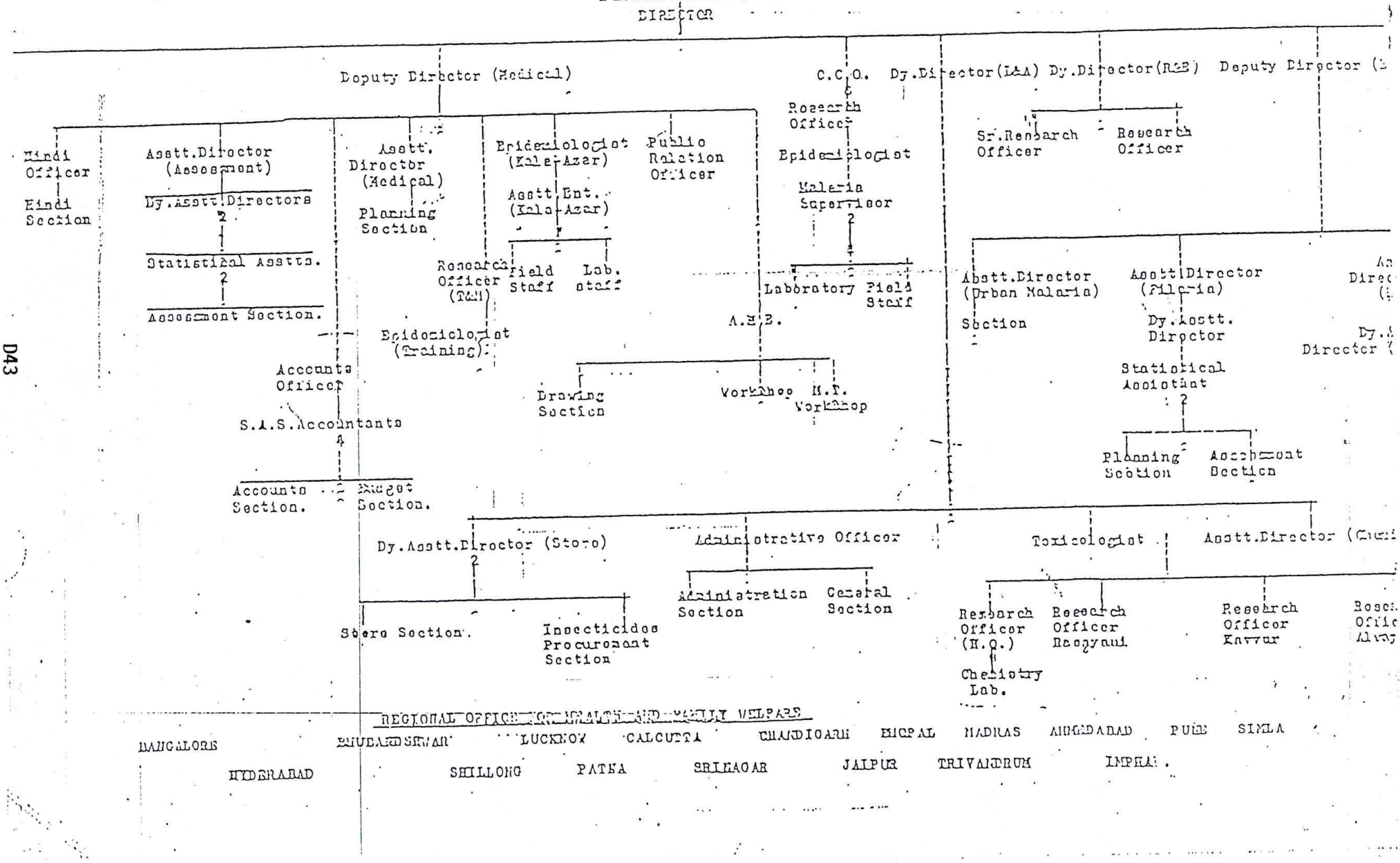
Sl. No.	Name of the state/ U.Ts./Others	Pre-MPO 1976	1984	VII PLAN 1985	1986	1987	1988 *
1.	Andhra Pradesh	5.43	0.86	0.69	0.52	0.92	1.07
2.	Arunachal Pradesh	58.03	43.84	36.56	32.03	24.65	27.35
3.	Assam	9.25	2.89	2.95	5.27	2.92	2.51
4.	Bihar	1.26	0.69	0.66	0.56	0.42	0.19
5.	Goa	2.09	0.10	0.07	0.34	3.81	5.70
6.	Gujarat	39.40	7.09	3.83	4.21	7.36	12.04
7.	Haryana	61.09	9.88	6.82	4.63	1.19	0.57
8.	Himachal Pradesh	7.35	7.79	9.97	11.36	5.92	2.67
9.	Jammu & Kashmir	14.76	6.12	11.30	13.58	3.69	1.39
10.	Karnataka	11.02	0.87	1.07	1.14	2.28	2.39
11.	Kerala	0.21	0.18	0.14	0.13	0.14	0.19
12.	Madhya Pradesh	19.01	2.60	1.87	2.80	7.99	4.52
13.	Maharashtra	12.26	1.35	0.89	0.67	0.83	1.16
14.	Manipur	1.18	0.82	0.74	1.10	0.65	0.65
15.	Meghalaya	5.78	10.46	8.29	9.60	6.94	7.40
16.	Mizoram	33.73	29.93	31.19	35.14	27.62	34.83
17.	Nagaland	2.27	5.35	5.13	6.28	4.97	3.46
18.	Orissa	63.91	10.38	8.74	11.08	8.24	7.14
19.	Punjab	30.31	12.16	11.68	9.02	4.48	1.72
20.	Rajasthan	14.12	2.99	1.93	1.57	1.85	2.49
21.	Sikkim	0.72	0.13	0.28	0.21	0.11	0.10
22.	Tamil Nadu	2.26	1.47	1.37	1.11	1.02	1.36
23.	Tripura	4.23	5.68	3.59	3.89	3.37	1.90
24.	Uttar Pradesh	3.59	3.66	3.18	1.92	1.04	1.09
25.	West Bengal	0.64	0.86	0.86	0.97	0.82	0.71
26.	A & N Islands	10.06	17.63	14.95	13.26	12.53	12.35
27.	Chandigarh	37.02	51.44	71.52	55.86	33.65	13.45
28.	D & N Haveli	-	15.77	23.08	39.90	54.09	56.20
29.	Daman & Diu	2.09	8.59	1.79	4.38	4.27	9.86
30.	Delhi	9.76	5.11	4.37	3.43	1.82	1.84
31.	Lakshadweep	2.78	0.07	0.02	0.15	0.07	0.02
32.	Pondicherry	0.67	0.80	0.45	0.35	0.34	0.42
	India Total	11.25	3.08	2.57	2.43	2.21	2.35

* figures provisional

PRESENT ORGANIZATIONAL CHART

ANNEXURE-6

NATIONAL MALARIA ERADICATION PROGRAMME
Organizational Chart
Ministry of Health and Family Welfare
Directorate General of Health Services
N.M.E.P. Directorate
DIRECTOR



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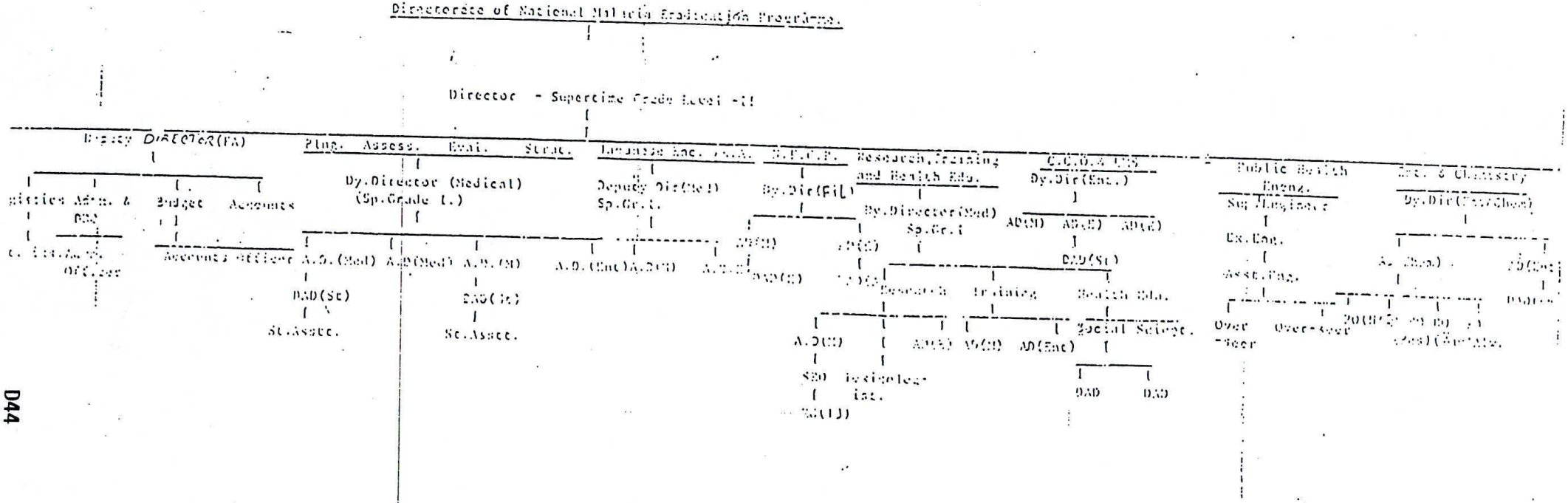
ANNEXURE. 7.

PROPOSED ORGANIZATIONAL RESTRUCTURING.



REPORT OF THE INDEPENDENT APPRAISAL TEAM OF THE NATIONAL MALARIA ERADICATION PROGRAMME

INTRODUCTION

Ministry of Health and Family Welfare, Govt. of India constituted an expert committee for an independent appraisal of the National Malaria Eradication Programme. The Independent Appraisal Team (IAT) comprised of the following national and international experts.

1. Dr. V.P. Sharma, Chairman
2. Dr. D.C. Hazarika, Co-Chairman
3. Dr. V. Orlov, Repporteur
4. Dr. G.K. Sharma, Repporteur
5. Dr. P.R. Arbani
6. Dr. Udom Chitpraro
7. Dr. Maliindra Dutta
8. Dr. N.G.Gratz
9. Shri N.L. Kalra
10. Dr. O.P. Khattar
11. Dr. R.S. Pandey
12. Lt. Col. P.B. Pillai
13. Dr. R.R. Purohit
14. Dr. E.S. Rahavendra
15. Dr. Ramalingeiswara Rao
16. Dr. A.P. Ray
17. Surg. Comm. Prakash Singh
18. Dr. M. Swaminathan

Members/Secretary from NMEP, HQs

1. Dr. B.N. Barkakaty
2. Dr. S.K. Chawla
3. Dr. S.C. Dutt
4. Dr. S.P. Misra
5. Dr. S.P. Rao
6. Dr. R.C. Sharma
7. Dr. G.P. Singh

IAT was appointed for 2 weeks (1-15 Dec. 1989). The terms of reference of the committee were :

1. To critically examine the policy issues and control methodolog incorporated in VIII Plan draft document prepared by the Director of N.M.E.P.

2. a) To review the operations under the Modified Plan of Operation for control of malaria.
   b) To determine the impact of operation on the epidemiological situation.

3. To review the spray operation, its timing, frequency and adequacy of coverage and problems faced in its implementation.

4. To review the nature and extent of operational problems affecting the programme, as well as financial and staffing constraints affecting the management of the control of malaria operation.

5. To review the problems and extent of resistance, if any, in P. falciparum to chloroquine and/or other drugs and measures undertaken to deal with the situation.

6. To review the reporting system on death due to malaria, measures undertaken to prevent such deaths and the adequacy of management and treatment of cerebral malaria cases.

7. To review the impact of multi-purpose workers scheme in the malaria control operations.

8. To review the training status and training needs of different categories of personnel in the Programme and the type of training required.

9. To review the recording, reporting and monitoring system and to recommend measures for improvement.

10. To review the participation of community in different aspects of the programme.

11. To examine the findings of various research projects being carried out in the country and suggest their feasibility for incorporation in the N.M.E.P.,

IAT members met on 1st December 1989 and the team was briefed by Dr. M.V.L. Narasimham Director, NMEP and his colleagues. At 5 P.M. the team met. Shri R. Srinivasan, Secretary Health and Family Welfare, Govt. of India. Members were briefed by the Secretary. The briefing by the Director NMEP continued on the second day as well. IAT was provided with reports, background material and VIII five year plan document. The briefing and background material were very useful in the evaluation of NMEP and in framing the recommendations.

The IAT divided itself into 7 groups and visited field areas from 4-11 Dec. 1989 (see fig. 1). Due to delayed flights some teams returned only on 12 Dec. This followed discussions and report writing. A debriefing meeting was taken by the Secretary, Health on 14 Dec. 1989 at 5 P.M. Salient features of the field visits and recommendations were presented to the Secretary.

IAT is grateful to the NMEP, Ministry of Health and Family Welfare, GOI, WHO, State Deptts. of Health, MRC field stations, Corporations and other agencies who were kind enough to provide valuable data and participate in discussions which constituted the basis for writing this report.

IAT depended heavily on the tour reports of 7 teams for writing of this report. These reports are being submitted to the NMEP Dte. separately. Some tour reports carry recommendations for special area/locality or they address to a particular problem in that State or district. It is suggested that these recommendations may be placed before the Technical Advisory Committee (TAC) of the NMEP for consideration and necessary action as may be deemed fit.

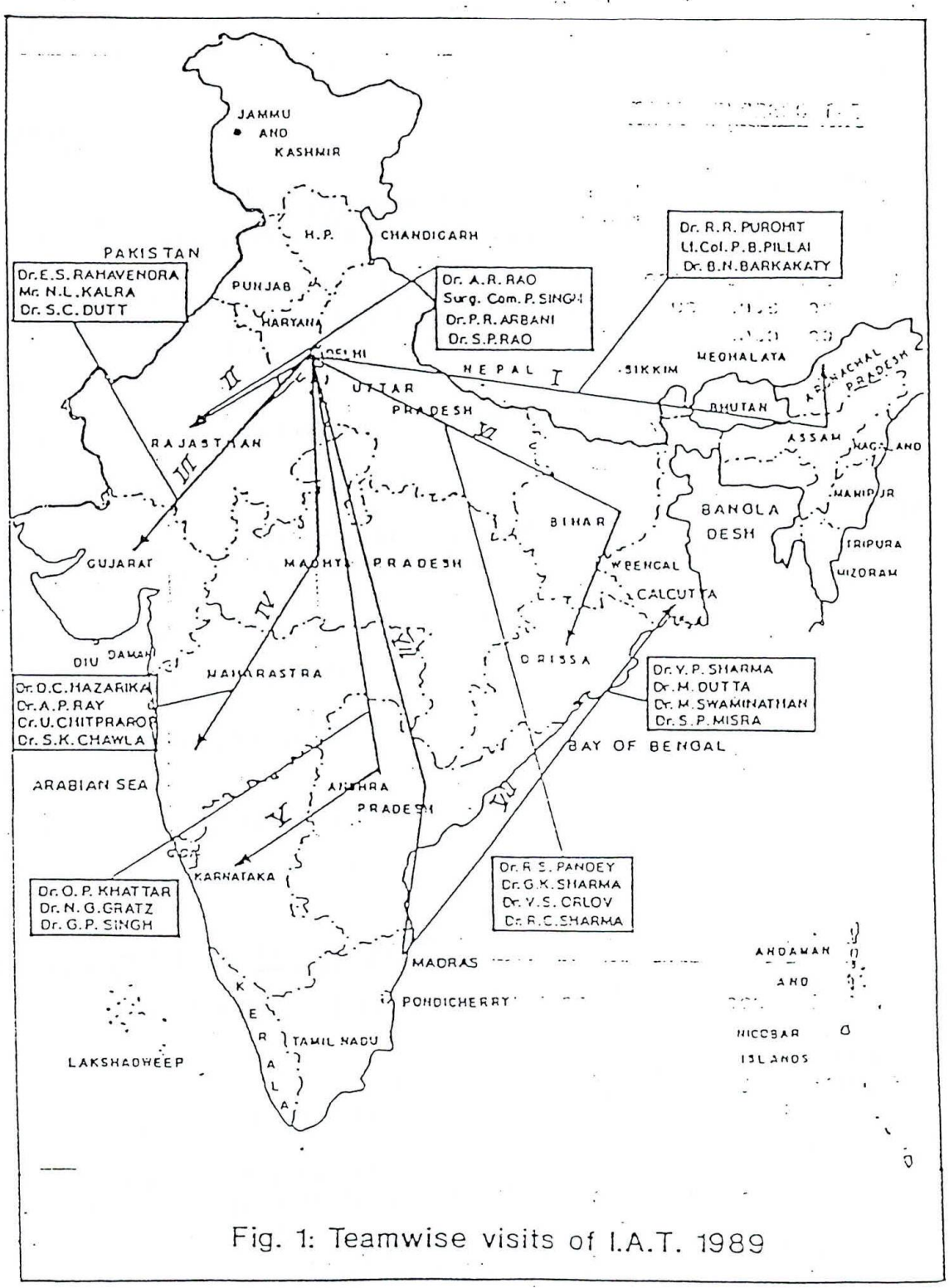


Fig. 1: Teamwise visits of I.A.T. 1989

prone area. Therefore full complement of peripheral surveillance staff has to be provided and administratively made to work as per schedule. There is need for a provision of a senior laboratory technician for 10 PHCs to supervise the peripheral laboratory workers and to provide on the spot training. Besides IAT also feels the need of additional surveillance mechanism to supplement the MPW in high risk areas. TAC of NMEP may work out details of the mechanism. IAT feels that all urban areas with municipality, corporation or local bodies should be brought under the urban malaria scheme (UMS) rather than towns with 40,000 population.

Epidemiological situation in the country is too driverse to be covered by a uniform criteria as laid down in the VIII Five Year Plan document. Therefore, the team felt that the criteria for introduction/withdrawl of spraying requires further elaboration based on the operational stratification of the country taking cognizance of the p.f. dynamics and the degree of instability of malaria. Nevertheless, the extension of health services at the periphery particularly, in areas with prevalence of falciparum malaria should get the highest priority.

It may be emphasised here that those areas which earlier had high API & AFI but now fall between 2 & 5 API are at this level of malaria incidence due to prolonged insecticidal pressure (even partial) over last decade. It may be emphasised that once such pressure is taken away due to inherent transmission potential, these areas may record fulminating epidemics. Therefore it is essential that in this 100 million population alternate vector control measures such as bio-environmental methods should be instituted simultaneously to forestall any deterioration in malaria situation.

It is felt that a great precaution should be taken while changing insecticides in the areas where vector develops or has developed resistance to commonly used insecticides. The alternate OP/Carbamate insecticides are often hazardous, while synthetic pyrethroids are costly. Application of new insectcides should be made judiciously and only to bring down high incidence. This is being recommended with the background of the fact that mosquitoes develop multiple resistance quickly, and there are not too many replacement insecticides available for use in public health.

IAT wishes to record appreciation for a well presented VIII plan document by the Directorate of NMEP.

2. Programme Review and Impact Analysis

National Malaria Eradication Programme (NMEP) was launched in 1958. NMEP was initially implemented as a vertical programme with determination and full support of the Central and State Govts. By 1965, the programme achieved spectacular success throughout the country, except some hard-core areas. The annual malaria incidence was brought down to less than one lakh cases. However focal outbreaks followed in some urban and maintenance phase areas. Malaria situation started to snow ball on account of technical, operational, organisational and financial problems. In subsequent years large scale resurgence of malaria was witnessed in the

country. The programme was evaluated in 1971 which resulted in the formulation of the Modified Plan of Operation (MPO). The MPO was implemented in 1977 with the following objectives :

1. To prevent deaths and reduce morbidity due to malaria

2. To maintain green revolution and industrial development.

3. To retain the achievements gained.

The main operational components of the MPO were to replace the concept of eradication with that of control & containment through the :

1. Spraying of an appropriate residual insecticide during transmission period in areas with 2 API or above.

2. Fortnightly blood smear collection from fever cases for case detection and treatment.

3. Antilarval operations in Urban areas.

In addition to above measures, attempts were made to intensify the efforts in hard-core areas by establishing Plasmodium falciparum Containment Programme (PfCP) with the help of Swedish International Development Authority (SIDA). Research activity were intensified in the country. Basic and applied field research were taken up by the Malaria Research Centre (MRC) and other institutions. Operational research was launched by the NMEP Directorate under the auspices of PfCP and ICMR.

Although field operations have been strengthened through research, and other improvements have been brought about in the programme, but the overall malaria situation has stagnated at about 2 million cases annually, of which a 30% constitute P. falciparum. The problem of insecticide resistance in vectors and drug resistance in parasite are making the field operations difficult and problematic. With this background GOI got the MPO of NMEP evaluated in 1985 by constituting a committee of national and international experts. The in-depth evaluation team observed that the MPO was a contingency plan which greatly helped in preventing epidemics of malaria, but in the present context of malaria situation it had out lived its utility. Recommendations contained in this document have not been implemented. IAT feels that immediate implementation of these recommendations would be a logical solution to many problems that have plagued the programme.

Organisation

MPO of NMEP was envisaged as a vertical programme. The erstwhile NMEP units and laboratories were re-organized and their boundaries were made co-terminus with the district/PHC boundaries. This was the first step to merge malaria control with the General Health Services. In 1977, Govt. of India decided to implement the Multipurpose Workers Scheme (MPW) in a phased manner under the Primary Health Care System. Under this scheme, the

c) States which did not spray areas where incidence was brought down to less than 2 API for 3 consecutive years, due to earlier spray operations, but sprayed other areas with 2 API and above.	In such States, uniform impact was observed barring the year when epidemic conditions prevailed following floods.	Andhra Pradesh
d) States which followed the pattern given above in areas without ensuring that there was true reduction in API based on adequate surveillance and laboratory services.	Because of inadequate surveillance, true distribution of residual malaria in the community could not be assessed resulting in high incidence of P. falciparum and P. vivax on account of deficient spray coverage and thus no uniform impact on malaria.	Karnataka
e) States not covering the entire technically targetted population - 2 API or above but restricting the areas under spray on the basis of descending order of API due to shortage of funds, insecticides and manpower.	These states showed uneven impact of spray coverage although there was a general decline in malaria in some districts, there was a rise either of P. falciparm or P. vivax cases depending on the extent and time of coverage during the spray rounds.	Gujarat Maharashtra Madhya Pradesh
f) States which could not give first round of spray due to shortage of insecticides i.e. DDT, BHC or Malathion because of late purchase, receipt, or delayed release of funds resulting in delay of recruitment of staff and purchase of anciliary equipment.	Due to disruption of first round of spray in highly malarious areas and its extension beyond prescribed period of 75 days - DDT, 45 days-BHC or Malathion sometimes extending to 180 to even 210 days per round, resulting in more than 2/3rd of the area remaining without spray coverage during peak transmission, resulted in high incidence of P. falciparum and P. vivax but the incidence fluctuated within a narrow range. Many of these areas are hard-core areas with high malaria transmission potential.	Assam Orissa West Bengal Tripura J&K Manipur Rajasthan Tamilnadu U.P.
g) States attempting scheduled rounds of spray in areas with 2 API and above but failed to do so because the spray operations were either commenced late or completed much after the scheduled date.		Arunachal Pradesh Bihar Himachal Pradesh Meghalaya Nagaland.

Having looked at the inadequacy of surveillance and spray operations the basic reasons giving rise to the operational problems are mainly on account of the following factors.

i) Low priority to the case detection under NMEP under the MPW scheme.

ii) Delayed release of funds by the States for field operations.

iii) Large number of vacancies in the MPW Scheme of male peripheral workers.

iv) Inadequacy of financial resources at the Centre and the States for spray and surveillance.

v) lack of FTD and DDC in the difficult areas.

vi) Inadequate procurement of insecticides due to financial constraints.

vii) Delay in release of funds for spray operations

viii) Large number of vacancies in the supervisory staff as per NMEP norms at the district level.

ix) Frequent changes in the NMEP leadership at the State Headquarters. Sometimes the state level programme officers are not trained in malariology, thus they do not have required technical knowledge for planning and execution of NMEP operations.

x) There is no provision for health education in NMEP to generate adequate awareness among the public to accept spray operations, and their participation in case detection and treatment.

REVIEW OF THE IMPACT OF THE MPW SCHEME ON NMEP OPERATION

This scheme had an adverse effect on both case detection mechanism and spray operations on account of the reasons already outlined in the paragraph on organisation. The other factors which have resulted in adverse impact of the scheme on NMEP activities are i) the administrative control of MPWs rests with the PHC medical officer and chief medical officer of the district. District malaria officer cannot take any administrative, corrective measures against the defaulting male MPW worker. ii) the female MPW workers who should collect blood smears from fever cases in their headquarter village or during their visits to house-holds do not do so in some of the States, while in a few States they have been utilised properly iii) the main factor which disrupted the passive case detection through voluntary agencies was a policy decision taken by the Central and State as regards to village health guide scheme. When this scheme was implemented, the FTDs and DDGs established under NMEP had become defunct and VHG was performing this function. During last two years the VHG scheme is not working properly thus there is adverse effect on passive case detection.

Resistance to chloroquine in P. falciparum

Twelve P. falciparum monitoring teams of the NMEP Dte. are located in the offices of the Regional Directors of Ministry of Health and Family Welfare in different States. A large number of tests have been carried out and it has been observed that in almost all States, there is evidence of chloroquine resistance in P. falciparum. From 1978 to 1989(Nov),altogether 163 resistant foci of various levels were detected viz., in Andaman Nicobar Islands (2), Assam (17), Andhra Pradesh (12), Arunachal Pradesh (4), Bihar (7), Gujarat (19), Haryana (4), Jammu & Kashmir (1), Kerala (1), Karnataka (11), Madhya Pradesh (9),Maharastra (5), Manipur (1), Meghalaya (8), Mizoram (4), Nagaland (3),Orissa (27), Punjab (3), Rajasthan (7), Tamilnadu (1), Tripura (2), Uttar Pradesh (8) and West Bengal (7).Further breakdown of the situation indicates that largest number of resistant foci were in Orissa followed by Gujarat, Assam, Andhra Pradesh. There is no clearcut pattern of P. falciparum resistance on regional or geographical basis.

Further out of a total of 6156 tests performed by NMEP upto 1989(Nov) 52.5% persons were sensitive to chloroquine, 47.5% had varying degree of resistance only 1.9% showed RIII level of resistance. The distribution of RII or RIII levels of resistance in the population varies from area to area. It was gratifying to note that between 1978-89 out of 51 foci, 9 of RIII level of resistance have been successfully liquidated by adopting intensive antimalaria measures such as the interruption of local transmission by an effective insecticide and use of long acting sulpha drugs.

A team located in Shillong is carrying out trials with alternate drugs for treatment of resistant strains of P. falciparum. The drugs like Quinine, long acting sulpha-pyrimethamine combination have been tried in Assam, West Garo Hills, Meghalaya and Arunachal Pradesh. These trials indicated that quinine and combinations of long acting sulpha-pyrimethamine gave encouraging results in majority of cases. In addition, in-vitro tests with Mefloquine, Amodiaquine and Quinine were also carried out by this team. However, it has been observed that other organisations like Malaria Research Centre have demonstrated that in large number of areas there is evidence of resistance to chloroquine in P. falciparum and resistance to Metakelfin was reported for the first time from Delhi, although cases refractory to Metakelfin and Fansider are being reported from other P. falciparum dominant areas as well. It is apparent that the problem has not been sufficiently delineated as yet. It was felt that the number of teams are inadequate to delineate the problem of chloroquine resistance in P. falciparum in the country.More tests, especially in-vivo 7 day short test are required to be taken up extensively in P. falciparum predominant areas. The State organisations can play an important role in this by making arrangement to carry out such tests in P. falciparum pre-dominant areas.

As regards use of antimalarials for treatment of P. falciparum, it was observed that the alternate antimalarials are being used in some areas based on 1982 drug policy. In view of recent evidence of many resistant foci in the country, there is an urgent need to change the drug policy and extend use of alternate drugs to other areas.

Proper treatment schedule for complicated and cerebral malaria cases is being practised in many States using appropriate antimalarial drugs. However, in some States the PHCs, hospitals are not following the standard treatment. It was felt that i) orientation training to all medical personnel including medical officers of PHCs, sub-division and district hospitals even medical colleges, nursing homes etc. in treatment and management of serious cases of malaria especially cerebral malaria should be imparted on large scale. ii) At present there is no referral system through which a peripheral worker can refer cases not responding to chloroquine to PHC or from PHCs to other hospitals for treatment. In view of the prevailing situation, it is essential to develop a referral system especially in P. falciparum predominant areas.

Deaths due to malaria

In 1974, a few deaths due to malaria were reported from DNK project, a re-settlement colony. Thereafter instructions were issued to all States to report malaria deaths. In the initial stages, some of the States, reported direct mortality due to P. vivax infection also.

Considering that direct mortality occurs in P. falciparum infection only, a detailed proforma was issued for investigation of malaria deaths. Since that time atleast suspected deaths due to malaria are fully investigated. Every year, deaths are being recorded from different States. It has been observed that the States of Assam, Bihar (South Bihar), Madhya Pradesh, Orissa, Tripura, Arunachal Pradesh, Mizoram have been reporting deaths regularly. The deaths are also reported from other States during focal outbeaks. Recently a large number of deaths have been reported from urban areas especially Baroda in Gujarat.

The observations of the Independent Appraisal Teams indicate that i) mortality reports are mainly available from hospital statistics which caters to the surrounding population ii) mortality occurring in tribal hilly areas with intense transmission is under reported. In these areas the mortality will affect the infant and child death rates. iii) the mortality is due to delays in referring the cases to treatment centres at PHC or district hospitals (iv) in some areas malaria deaths occur due to improper management of serious malaria cases, especially in pregnant women.

It is felt that malaria deaths can be prevented if complicated malaria cases can be quickly referred and transported to a well equipped hospital at an early stage.

Focal Outbreaks

It has been observed that a large number of focal outbreaks occurred in different parts of the country since 1984, (Fig 2) and there were repeated focal outbreaks in some areas. There was high P. falciparum incidence and deaths due to malaria in these focal outbreaks. The analysis of situation indicated that focal outbreaks have occurred (a) in areas where P. falciparum is predominant b) in foot-hill areas or high transmission areas due to failure of spray operations and break down in surveillance (c) in other plain epidemic prone areas, the focal outbreaks had occurred because of complete breakdown of case detection mechanism over

long periods during transmission season. The climatic conditions suitable for high transmission triggered focal outbreaks in such areas. Such focal outbreaks could have been avoided by regular case detection at fortnightly intervals alongwith timely spray operations.

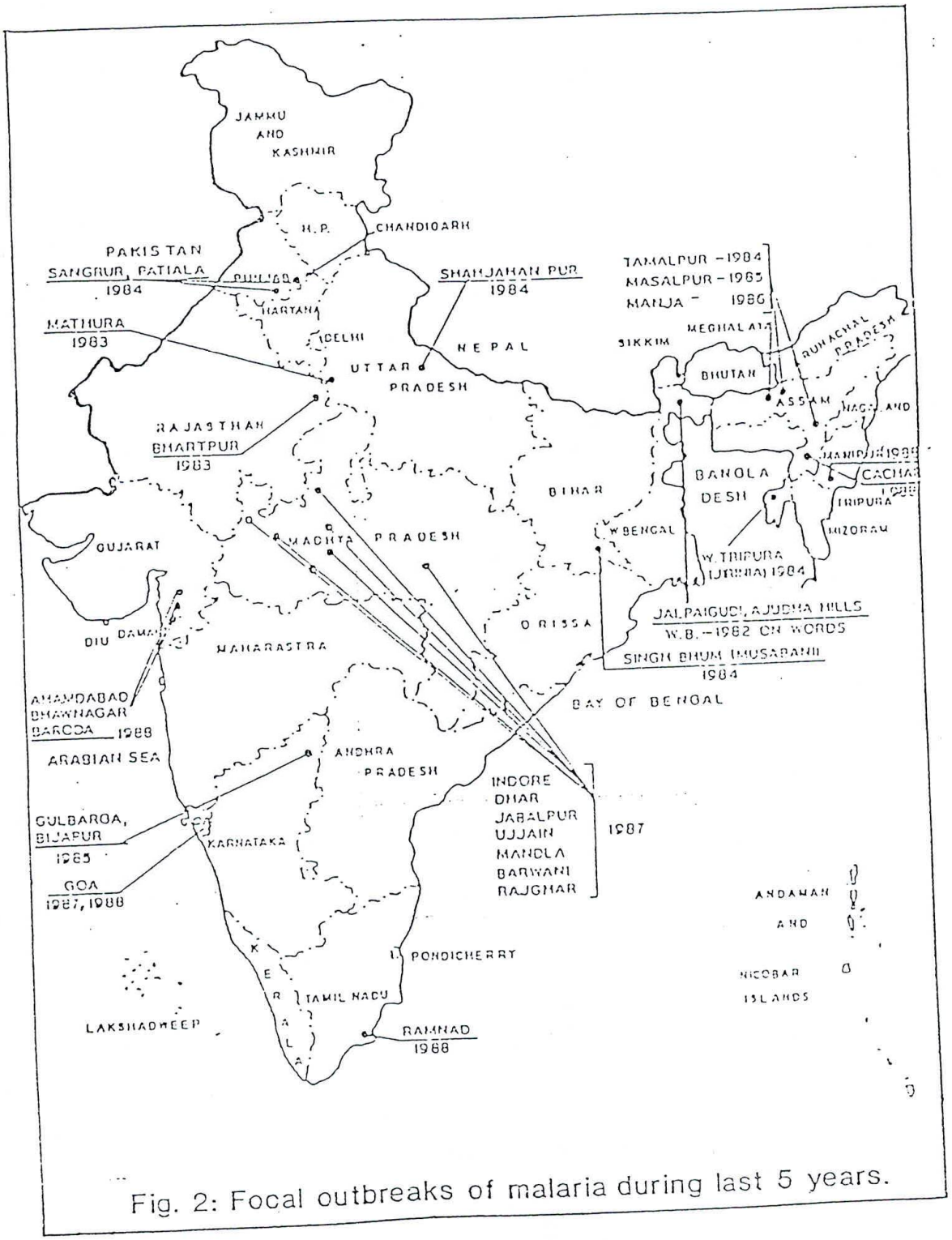


Fig. 2: Focal outbreaks of malaria during last 5 years.

Training

All categories of personnel under the programme including the officers and field staff under the MPW scheme require orientation training to change their attitude towards malaria problem in the community and to impart adequate skill to them for performing the tasks allocated. A few orientation training courses were conducted by the Dte. of NMEP for PHC medical officers and these are not adequate. It is necessary to give orientation training to all malaria MPW workers. It was seen that in the training curriculum of MPW, hardly 14 hours are allocated for ten comunicable diseases. The time is inadequate for a widely prevalent disease like malaria. Therefore, it is necessary that there should be a separate orientation training of MPWs for malaria. The laboratory technicians in the PHC are working in isolation. Most of them do not have adequate technical knowledge regarding staining, identification of parasite etc. It is essential that they should be regularly trained through short term orientation courses to improve efficiency and reliability of laboratory technicians. There is also need to develop training modules and programmes for engineers, town planners, architects, health administrators, participating collaborating agencies and other identified groups.

Supervision

The technical supervision and guidance, in planning and execution of field activities is conspicuous by its lack in almost all states. The State programme officers, zonal officers and in those states where DMO is a medical person. These officers come in the programme for a short period of time. The officers lack expertise and they hardly have any concept of malaria epidemiology and its control. They also do not take any interest or try to improve as they know that very soon they may leave this position. Thus the supervision does not improve.

Community participation

The in-depth Evaluation Report 1985 had placed a great emphasis on community participation in NMEP activities. In case the community is not aware of malaria problem and the services available to them under the programme, the importance of various control activities undertaken by the NMEP, it is very difficult to obtain their active participation in control of malaria. However, it was observed that there is no machinery at PHC or district level to impart health education for enlisting community participation and because of lack of awareness in the community, people do not come forward for blood examination and take adequate antimalarials, or report to the PHC and other referral centres in case of complicated malaria. They also do not accept spray operations for transmision control. Under the circumstances, it is difficult to visualise improvement in peripheral operations without active community participation unless newly developed health education techniques are applied through a network of dedicated peripheral workers.

URBAN MALARIA

Under NMEP, in urban areas with 40,000 population or more, regular insecticidal indoor spraying was done in the peripheral belt only. In the township, antilarval methods along with minor engineering, source reduction, drainage etc. constituted main methods of mosquito and transmission control supplemented by case detection, active and passive and chemotherapy.

This policy was adopted mainly because malaria was considered to be a major problem in rural areas. In urban areas, insecticidal spray was not acceptable to the community. However, as early as 1961, some urban areas in TamilNadu recorded high malaria incidence. From 1967 onwards, proportion of cases contributed by the urban areas was quite substantial. The problem arose mainly due to the urban vector A. stephensi and the fact that antilarval operations were not implemented properly by the local bodies for the control of A. stephensi breeding. It was also observed that urban areas provided focus for dissemination of malaria to rural areas where incidence had been brought down to a very low level under NMEP. In addition to this, focal outbreaks of dengue fever transmitted by Aedes aegypti were occasionally reported. Therefore, Govt. of India decided to implement the Urban Malaria Scheme (UMS) in 1971 covering 23 towns. The scheme was gradually expanded and at present 127 towns in 17 States and two Union Territories, protecting nearly 62 million population. Inspite of the intensification of antilarval methods under UMS, the incidence of malaria in some urban areas is still very high, notably Madras city in TamilNadu records nearly 60-70% of the total incidence of the State. There had been epidemics of malaria in Delhi and in some other major towns. At present, the situation in Calcutta is also rapidly deteriorating,and in Baroda city a large number of malaria deaths have been reported during 1988.

The teams observed that malaria in urban areas is man made problem. Rise in incidence is due to i) rapid construction expansion, industrialisation and consequent movement of migratory population to urban areas. ii) The breeding potential of A. stephensi in cities is enormous and vector densities are also high. In peri-urban areas, malaria transmission is maintained by A. culicifacies. iii) The residual spray or even the focal spray is objected to by the people, except in slums. iv) The medical practitioners treat the patients on clinical basis and often the cases are mis-diagnosed and given wrong treatment. v) In migratory population radical treatment is difficult to be instituted. vi) a similar situation exists in hospitals whether government or private in regards to malaria treatment As a result case reporting from urban areas is only by the health department of local bodies and the true malaria situation remains unknown.

Voluntary agencies do not come forward for any assistance in malaria programme and they are more inclined to support programmes like immunisation and family welfare. Due to financial constraints in almost all the Municipal bodies, Health Education could not be imparted extensively and the use of mass media is non-existant.

A critical study of the present urban malaria scheme revealed that

i) At present urban areas with 40,000 or more population and showing >2API are under the UMS. Since malaria incidence in urban areas is not monitored in any meaningful manner, it is recommended that all towns with municipality, urban or notified areas with malaria risk should be brought under the UMS.

ii) Construction activities and lack of vector control leads to focal outbreaks of malaria. Vector breeding is maintained by the open overhead tanks cisterns and wells. Legislative measures are not uniform and penal provisions are not stringent. There is need for uniform legislation applicable to all urban areas with stringent penal provisions.

iii) There is no active surveillance component which may be instituted atleast in slums. In other areas activated passive surveillance should be started.

iv) There should be one malaria clinic for each 1 lakh population. Entomological component in urban areas is either weak or non-existant and it is not possible to implement any intervention measures without entomological support, and therfore it would be advisable to provide this support to the urban areas. A committee may go into the problems and suggest norms.

v) Urban local authorities lack adequate funds to buy insecticides, and therefore finances may be supplemented by the NMEP.

vi) Hospitals (govt. or private) should be made to examine blood smears for malaria of all fever cases.

vii) Frequent workshops involving doctors of General Hospitals, private hospitals/private practitioners should be arranged in urban areas.

viii) Engineers of the urban areas should be educated about the mosquitogenic conditions created as a result of construction projects and method to avoid or improve such conditions.

ix) All construction plans should be referred to health department for clearence as was done in the past. A public health engineer should be involved in checking of designs and in the teaching programmes.

x) Mass media should be exploited fully so that people are aware of the programme and they know the 'Do's and Dont's.

C) Recommendations of a suitable mechanism of inter-sectoral coordination should be evolved in each area. In some urban areas committees have been constituted involving all agencies. They meet once in six months or so but no follow up action is taken. What is required is the time bound targets and accountability of each agency.

Project malaria

The development projects like an industrial complex, water resource development project, forests and the projects connected with expoitation of natural resouces, are all associated with a large scale movement of population. This tropical aggregation of labour and the associated malaria problem is a well-known phenomenon. A labour migrating from different areas bring about a mixture of immune and non-immune population with parasite reservoir of different strains. Some studies conducted by Dte. NMEP have revealed that nearly 100 million population moves every year as agricultural labour. About one million population is involved in road and other construction activities in industrial complexes and urban areas everyday. In the past, the high malaria incidence was recorded in many projects, like Hirakund, Sileru, Srisailam in Andhra Pradesh, Hasdebango, Gandhisagar in Madhya Pradesh and Sathanur Dam in Tamil Nadu. The industrial projects like Mirzapur Thermal Power had also recorded malaria epidemics. Tropical aggregation of construction labour in urban areas is often responsible for starting a focus of transmission.

IAT feels that the problem of tropical aggregation of labour was neglected most. There was no special provision for taking malaria control measures or treatment of labour force through the programme organisation. This aspect was left to the health organisation of the project itself. As a result there were focal outbreaks of malaria in the project areas. This problem needs to be addressed on priority basis since the industrial and agricultural growth of the country is one of the most important infrastructure for sustainable development.

The independent appraisal teams visited States of Karnataka, Andhra Pradesh and Gujarat and observed that in Upper Krishna Project of Karnataka, malaria incidence increased to API of 288.7 with high proportion of P. falciparum in the project area of the district. Similarly in Gujarat, Ukai and Kakrapar Dam, have resulted in high incidence of malaria in several Talukas of Kheda District of Gujarat. Extensive inundation of low lying areas had increased the malariogenic potential leaving a trail of malaria in neighbouring villages. IAT also observed that industrial projects in Surat district presented a very alarming malaria situation because of poor water management. Similarly in Andhra Pradesh in Visakhapatnam malaria incidence prior to setting up of Visakhapatnam Steel Plant Project was very low. In this project thousands of labour from malarious areas of Orissa, Madhya Pradesh are engaged in construction activities. In labour colonies malaria incidence is very high e.g., in 1988 there were 9199 cases of malaria with nearly 30% P. falciparum in 1500 families. In 1989, the situation has further worsened.

It is very difficult to provide estimates of all on-going projects. A large number of projects have been taken up during the last 3 to 4 decades, and atleast about 300 major projects are connected with iron, thermal power and mines etc. Apart from these, a large number of big and small water resources development schemes are located in different parts of the country.

Considering the epidemiological significance of events associated with the tropical aggregation of labour IAT is of the opinion that a high priority should be given to project malaria which would tackle the problem

of migratory population and also benefit poeple of poor socio-economic status both belonging to tribal and non-tribal areas.

Field Operations Research

IAT discussed malaria research in India and also looked at research activities of the MRC and NMEP. MRC is a well knit organisation with capability for undertaking both basic and applied field research. However, the research capability and organisation for field operations under NMEP are very weak and inspite of the recommendations of in-depth evaluation 1985 it has not been strengthened.

IAT identified some priority areas of research to improve field operations in addition to the ongoing research activities in the country. A list of suggested research topics is given below.

1. Identification of the difficulties/deficiencies in staining and slide examination procedures for diagnosis of human malaria parasite in field conditions and to recommend quality assurance.

2. A study to develop clinical parameters for malaria surveillance workers to help collect blood smears from malaria cases so as to avoid screening of all other non-malaria fevers.

3. A longitudinal study on irrigation malaria in water resource development projects.

4. A study to develop, and test the feasibility of engineering intervention methods in the control of mosquito breeding to interrupt malaria and filariasis transmission in selected localities.

5. A study of the sociological impact of bio-environmental control intervention measures.

6. A study of involving voluntary agencies in the implementation of integrated methods of diseases vector control.

7. A study of factors relating to delays and inadequate budgetary provision and how to ensure their timely release.

8. Socio-economic research on (i) people's perception of malaria as a diseases (ii) priority of communities (iii) peoples expectations in terms of malaria control (iv) behavioural problems and (v) reasons of refusals etc. with a view to find mechanism to improve the field operations.

9. Studies to evaluate pattern of relapse in P. vivax with (5 day RT) with or without radical treatment in malaria zones of different endemicity and P. vivax prevalence.

10. Monitoring of chloroquine resistance in P. falciparum in areas showing drug refractory behaviour through 7-day short in-vivo test by PHC Medical officers.

TABLE 1 : RESISTANCE STATUS OF A. culicifacies SIBLING SPECIES AND INSECTICIDAL SPRAY RECOMMENDATIONS

	State	Sibling species composition & different sympatricities	Insecticides being used	Resistance status	Recommendation	Remarks
1.	Jammu & Kashmir		DDT & HCH	No information	Stop HCH & spray DDT	A. culicifacies s.l. generally is fully resistant to dieldrin but shows 20-30% mortality when exposed to DDT (4% 1hr) in bio-assay tests. Among Sibling species A and B, Sibling species A is more susceptible than species B to DDT. As Sibling species A is the primary vector of P. falciparum and P. vivax malaria DDT spray would bring epidemiological impact. It may, however, be noted that continuous spray of DDT may reduce the susceptibility of Sibling species A as well, and DDT spray may become ineffective over a period of time. Data collected from Haryana where malathion spray was introduced in 1982 shows that it takes 6-7 years for resistance to develop in Sibling species 'A'. This year in 1989, for the first time malathion resistance was observed, in Sibling
	Dist. Kathua	A and B				
	Other areas	B			No spray required	
2.	Himachal Pradesh	A and B (predominantly B)	DDT and HCH	No information	Spray only DDT	
3.	Haryana	A and B	HCH and malathion	Both species A & B are fully resistant to HCH. Species A is more susceptible to DDT than species B. Malathion resistance in spcies-B-50-60% & in species A-5-10%.	Discontinue malathion, otherwise resistance to malathion will increase. Spray only DDT.	
4.	Punjab	A and B	DDT, HCH and malathion	A. culicifacies s.l. resistant to HCH and DDT. Fully susceptible to malathion.	Spray DDT. Use Malathion in focal outbreaks.	
5.	Uttar Pradesh		Most areas under HCH and a few under DDT.	Species A and B are almost fully resistant to HCH. Species A is more susceptible to DDT than species B. Both the species are fully susceptible to malathion.		
	Western	A and B			Spray DDT. Stop HCH. Use malathion for focal outbreaks only.	
	Eastern	B			No spray required.	

6. Tamil Nadu	A and B	DDT, HCH and Malathion	No information	Spray DDT. Malathion to control epidemic situations.	species A, 5-10% and in species B 50-60%. This suggested that resistance precipitates faster in Sibling species B than in Sibling species A. In species B it might have developed earlier but due to low proportions of species B in these areas it might have gone unnoticed.
7. Andhra Pradesh	B and C	DDT & HCH	B and C resistant to DDT, HCH and also to malathion in cotton/chillies growing areas.	Spray DDT. Malathion, or a synthetic pyrethroid for outbreaks.	Both Sibling species B & C in Andhra Pradesh were fully resistant to DDT and dieldrin in bio-assay tests. Further, in Andhra Pradesh, it was observed that within 3-4 years of exposure to malathion both the species developed resistance. In Gujarat resistance developed within 4 years of spray. The Sibling Species C was incriminated as vector of malaria but it was not as efficient as Sibling species A or D. It may be noted that of propoxur or fenitrothion are used continuously, cross resistance may develop to all OP and carbamate compounds.
8. Bihar		DDT	A. culicifacies s.l. resistant to DDT.		
North	B			No spray required.	
South	B and C			Spray DDT.	
9. Orissa	B and C	DDT and HCH	A. culicifacies s.l. resistant to DDT and HCH.	Spray DDT. Reserve Malathion for outbreaks.	
10. Gujarat	B and C	DDT, HCH and malathion.	Both B & C are resistant to HCH & DDT and also to malathion in areas where malathion is being sprayed..	In HCH areas, spray DDT. Replace malathion with a suitable insecticide.	
11. Rajasthan	A,B,C and D	DDT & HCH	All species are equally resistant to DDT and HCH.	Spray DDT. Reserve Malathion for epidemic situations.	

12. Madhya Pradesh	A,B,C and D	DDT & HCH	A. culicifacies s.l. resistant to DDT, HCH and also to malathion in areas with cash crop cultivation.	Spray DDT. Reserve Malathion for outbreaks.	Regarding species D no specific data is available However, with reference to other biological characters it behaves like species A. Species D was found to be the primary vector of malaria in districts Mandla and Jabalpur of Madhya Pradesh. This suggests that resistance to malathion may take time to develop in species D as in species A.
13. Maharashtra		DDT, HCH and malathion.	A. culicifacies s.l. resistant to HCH and DDT and also to malathion in areas where it is being sprayed.	As suggested for Gujarat.	
Dist. Aurangabad & Sholapur	A,B,C and D				
Dist. Beed & Jalgon	A,B and C				
Dist. Kohlapur	B,C and D				
Dist. Sangli	B and C				
14. Karnataka		DDT,HCH and malathion	A. culicifacies s.l. resistant to HCH and DDT and fully susceptible to malathion.		
Dist. Gulbarga	A and B (predominantly A)			Spray DDT	
Dist. Bijapur	A,B and C				
Dist. Belgaum	B,C and D				
Southern Areas	A and B (predominantly B)			Continuous spray not required except during outbreaks when DDT should be sprayed.	

EVALUATION REPORT

OF THE

P.FALCIPARUM CONTAINMENT PROGRAMME

UNDER

NATIONAL MALARIA ERADICATION PROGRAMME

OF INDIA

JANUARY/FEBRUARY 1989

The Government of India appointed a Committee for the Evaluation of the PfCP programme vide Order No. P 14017/2/88-MAL dt.5.1.89 under the Chairmanship of Dr. Harcharan Singh, Adviser (Health), Planning Commission. The Government of India is seriously concerned about the resurgence of Malaria in the country from early 70s to date. A special feature of the resurgence is the emergence of P.falciparum malaria. The usually stronghold of P.falciparum malaria in North-Eastern part of India is giving way to larger dissemination of the infection in the country coupled with the serious problem of drug resistance.

The Indepth Evaluation Committee has gone into the details of financial, operational, training, research and development aspects of the programme and is of the view that the speical strengthening for the containment of falciparum malaria in the country, the PfCP initiated in 1978 with the assistance of SIDA, need continued support.

Over the years the PfCP has been able to successfully contain the falcifarum malaria in the country to a reasonable extent. It is strongly felt that in areas where the falciparum infection is high a special strengthening would be absolutely essential, which will have to be modified keeping in view the regional/local realities.

Apart from the speical strengthening for the successful containment of the serious falciparum malaria problem in India a few more areas would need special attention. These are the areas of Training, Research and Development, Community Participation and Health Education. It is further strongly felt that all developmental projects must have clearance from the health angle before they are implemented in the country. Such a mechanism needs to operate at the National/State/ District/Local level.

The whole issue of the control, containment and eradication of malaria is bound to be incomplete in India without seriously handling the problem of falciparum malaria.

DR. HARCHARAN SINGH,
Chairman Evaluation Team,
Adviser (Health), Planning Commission

DR.A.P.RAY,
Co-Chairman,
Evaluation Team

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ACKNOWLEDGEMENT

At the outset the Team wishes to extend its sincere appreciation to the Government of India for the opportunity given to it for undertaking the Evaluation of the P.falciparum Containment Programme, under the NMEP.

The Team also wishes to thank the authorities of the Ministry of Health and Family Welfare, for the opportunity given to it to meet and present the observations of the Team, to Mr. R. Srinivasan, Secretary of Health and Family Welfare, Dr. G.K. Vishwakarma, DGHS and other officials of the Ministry.

Thanks are also extended by the Team to the State authorities specially to the Programme Officers for providing all facilities and unstinted co-operation to the visiting Members of the Team.

Grateful appreciation is also extended by the Team to the World Health Organisation SEARO and the Swedish International Development Authority for their extremely helpful gesture and all the support for the conduct of this evaluation.

Finally, the Team extends its most sincere thanks to Dr. M.V.V.L. Narasimham, Director NMEP PfCP officials and staff in providing enormous amount of documents on relevent information on the activities of PfCP as well as briefing the Team on the subject of Evaluation.

Contribution by the Secretarial staff of NMEP and PfCP is highly appreciated.

INTRODUCTION

Evaluation of PfCP on different aspects like operational, research and training was to be done as per SIDA agreement. The Govt. of India, Ministry of Health and Family Welfare therefore appointed a committee of experts vide order No. T.14017/2/88-MAL dated 5.1.1989 the composition of which is given below:

1.	Dr. Harcharan Singh, Adviser (Health), Planning Commission	- Chairman
2.	Dr. A.P. Ray Eminent Malariologist and Retired Director, NMEP	-Co-Chairman
3.	Dr. T.P. Sharma Director of Public Health and Family Welfare (MP)	- Member
4.	Dr. R. Reuben Director for Research in Medical Entomology Malaria (TN)	- Member
5.	Dr. J.P. Gupta Director, National Institute of Health and Family Welfare	- Member
6.	Dr. V.P.Sharma Director, Malaria Research Centre	- Member
7.	Dr. S. Pattanayak Retired Director, NMEP	- Member
8.	Dr. R.R. Purohit Retired Director of Health Services, Rajasthan	- Member

International:

1.	Dr. J.A. Najera Director Malaria Action Programme WHO HQ. Geneva	- Member
2.	Dr. W.W. Macdonald School of Tropical Medicine, UK	- Member
3.	Dr. M.V.L.P. Samarasinghe Director Malaria Programme Sri Lanka	- Member
4.	Dr. Udom Chittrarop Regional Director (Malaria) Chianghai (Thailand)	- Member

SIDA:

1.	Dr. G.J. Gille	- Observer
2.	Mr. Gordon Tamm	- Observer

The period of evaluation was from 23 January to 6 February, 1989.

The terms of reference of the expert committee as specified by Government of India were:

i) To assess performance of PfCP from 1984 to 1989 in respect of defined objectives with reference to operational, research and training aspects.

ii) To give recommendations including imminent approaches to accelerate the reduction of malaria incidence particularly P.falciparum incidence in the country with reference to operational, research and training through Primary Health Care system.

The committee met on 23 January, 1989 and was briefed extensively by Dr. M.V.V.L. Narasimham, Director, NMEP on the working of PfCP (Plasmodium falciparum Containment Programme) and the current malaria situation including the P.falciparum in the country as well as in the areas under the PfCP in the various States and Union Territories.

The following documents were provided to each member of the committee:

1. Annual Report of PfCP for the year 1985, 1986 and 1987.
2. The three quarterly reports of PfCP for the year 1988.
3. The Annual report of NMEP for the year 1987.
4. The Status paper on NMEP - India by Dr. M.V.V.L. Narasimham, Director, NMEP.
5. The situation analysis PfCP 1981-1987.
6. In-depth Evaluation Report of the MPO under NMEP of India-1985
7. PfCP Research Review and Recommendations for practice in field research in malaria in India - 1986.
8. Modified Plan of Operation - Stretegy and guidelines
9. SIDA agreement 1984

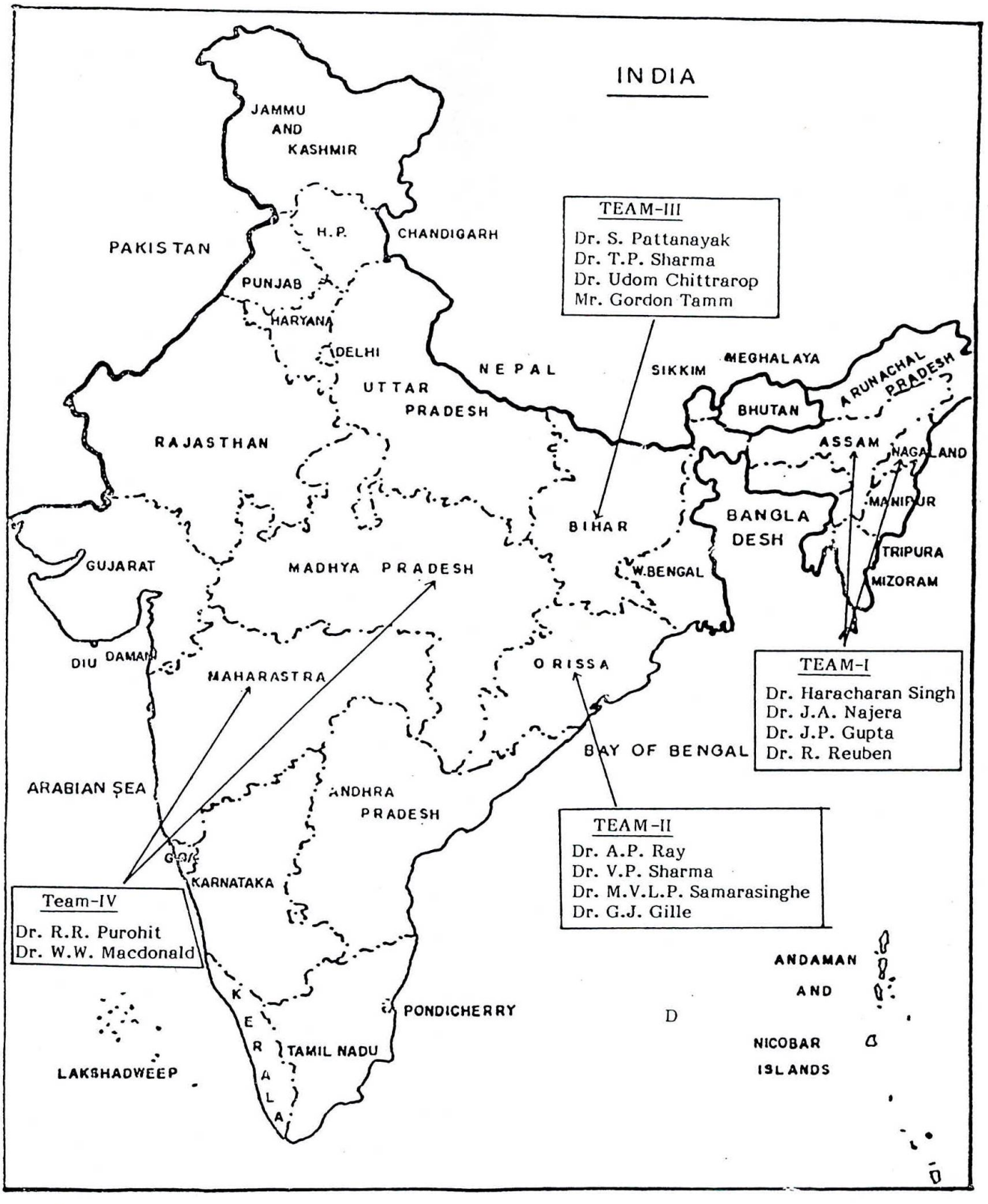
10. P.falciparum Containment Programme - Ten years of operation in India (1978-88) by Drs. A.P. Ray, M.V.V.L. Narasimham, A.V. Kondrashin and Anna-Kari Bill.

In addition to the above documents a copy of the recently proposed training curriculum for the various training courses, by a team of National experts, was also handed over to this committee.

In order to get first hand information about the programme and the working of PfCP component the Committee divided itself into four teams and visited a number of States. The details of the tours undertaken are indicated in the accompanying map.

The committee had the previlage of meeting and discussing with malaria programme officers of the States and their Zonal/District level officers as well as the Co-ordinators of PfCP Zones and their Special and District Epidemiologists.

The committee including SIDA observers met the Health Secretary, Government of India, Ministry of Health and Family Welfare on 6 February, 1989. The report was presented by the chairman of the committee and the Health Secretary interacted with various members of the committee. The Director General of Health Services, WR and WHO staff and SIDA members were also present during the discussions.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ANDAMAN AND NICOBAR ISLANDS
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Dr. T.P. Sharma
Dr. Udom Chittrarop
Mr. Gordon Tamm
TEAM-I
Dr. Haracharan Singh
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Dr. J.P. Gupta
Dr. R. Reuben
TEAM-II
Dr. A.P. Ray
Dr. V.P. Sharma
Dr. M.V.L.P. Samarasinghe
Dr. G.J. Gille
Team-IV
Dr. R.R. Purohit
Dr. W.W. Macdonald

1. **Summary of observation and recommendations by the evaluation team**

Team noted that

1.1 The epidemiological component provided to the programme through SIDA/WHO assistance has been able to provide substantial support at the various tiers of the state antimalaria organisation (NMEP). In some instances it played a dominant role.

1.2 Residual insecticidal spraying strategy is seriously handicapped affecting attainment of the targets on account of

(a) vacancies of key posts for long periods and frequent transfers

(b) financial constraints related to spraying operations

(c) interference like mud plastering of spraying walls

(d) refusals to spraying

(e) lack of intersectoral co-ordination, community participation and health education

(f) actue shortage of roadworthy transport seriously affecting the mobility of supervisory officers

(g) these problems are compounded by inadequacy of epidemiological surveillance, on account of 30-40% vacancies at the MPW level and the corresponding supervisory tires.

1.3 With regards of blood smear cross checking activities in the States, it was noted that except for two States in PfCP areas, the task has been relegated entirely to Regional Co-ordination Organisations of the NMEP Directorate. The team felt that with the volume of collection of blood smears and the existing facilities at RH&FW the services are inadequate.

1.4 The numbers of DDCs and FTDs, which were opened at the time the MPO came into existence, has gone down to a point beyond their usefulness. One of the main factors is inadequate and lapses in supply of drugs to the voluntary agencies. Thus this aspect of the programme is mostly rendered ineffective losing an important element of M.P.O. which is people's participation.

1.5 The present status of sensitivity of P.falciparum to chloroquine indicates that while in some PfCP hard core areas high level resistance (at R III level) was encountered over a number of years, the situation improved very considerably and such a level of resistance was absent upto 1986. Later however, there has been evidence of isolated and unrelated foci in a few areas detected through intensified monitoring system.

1.6 Entomological studies under PfCP, both in Zones-I and II gained momentum and systematic studies were undertaken on vector, biology behavioural studies, vector incrimination and their role in transmission of malaria mainly in the context of the epidemiology of P.falciparum. Team confirmed the presence of main vectors which existed earlier and studied their bionomics in relation to malaria transmission. Besides, new species not reported earlier were detected and thus the scientific staff of the PfCP fulfilled its primary objective. The time was ripe to focus attention to specific problem areas where active transmission was continuing under varying geographical areas, inhabited by tribal population as well as to the problem of migratory population.

2. **Team Recommended**

2.1 That there is an immediate need to consider the provision in an effective form and on regular basis of an additional component should there be withdrawal of external assistance presumably in a phased manner with necessary coverage during the interim period to ensure maintenance of the gains achieved.

2.2 NMEP must strive to ensure adequate coverage to make the existing operations cost effective. A switch over to any alternative approah without demonstration of its effectiveness in lieu of the existing activities was likely to create explosive situations especially in areas with high transmission potential.

2.3 There is an urgent need for:

(a) motivated community participation

(b) sustained health education and maintenance of regular dialogue between the programme and its beneficiaries

(c) re-establishing the appropriate communication system with the district and peripheral authorities as per policy laid down in the past, and

(d) initiating action to accelerate the process of development of intra and intersectorial co-ordination.

2.4 In many areas residual insecticidal spraying has not yielded desired results on account of various problems/constraints and gross organisational deficiences. Team considers malariogenic stratification as basis for according priority for a realistic approach to select areas for spraying, and felt that continuation of the activities on the present pattern will not only be unfruitful but also present a false sense of security.

2.5 There should be a provision of a senior technician for one over 10 PHCs in a district who is required to visit PHC within his ambit and he is responsible for quality, staining, streamlining a system of cross checking, help in clearing the backlog, paying attention to microscopes and ensuring proper functioning of the laboratory

2.6 To minimize deaths due to malaria and reduce morbidity NMEP should re-open more DDCs and FTDs as per the norms of MPO after identifying suitable voluntary agencies such as school teachers and to ensure regular flow of anti-malarials to these agencies as school teachers and to replace the drugs consumed.

2.7 Anti-malaria drug policy of the NMEP should be reviewed in view of the discovery of more foci of drug resistance in P.falciparum, backlog in slide examination, the problem of migration and tropical aggregation of labour and the ease with which long acting sulpha drugs are available in the market.

2.8 There is a need of immediate strengthening of the entomological component of the programme with emphasis on field experimentation. Additional field research units should be established and given sufficient resources and freedom of action to carry out goal oriented research.

2.9 There are 72 zonal entomological units in the country in addition to the PfCP research units working in entomology. This important resource should be co-ordinated and linkages established through a research committee for launching mission oriented time bound entomological research of relevance to the control of malaria.

2.10 NMEP should promote and help sister institutions in the conduct of applied field research on malaria and take up operational reseach to remove bottle necks in achieving malaria control targets set out in plan documents of the Govt. of India. In order to achieve this objective a cell should be created within the NMEP to supervise and co-ordinate inter and intra-institutional research.

2.11 Training should be strengthened at all echelons. This should be taken up immediately through the training of trainers, for organising regular training courses at the periphery and organising specialised (e.g. entomological, epidemiological and vector control) training for senior level officers at the central and state level. Team underscores the importance of utilizing the experienced and well trained staff of the PfCP in strengthening the training programme, as well as in deploying them in operational research and such other activities.

2.12 A health committee may be consituted at the state level to examine all developmental projects from malaria point of view and accord clearance. It should be mandatory for all developmental projects to obtain clearance from this committee and follow the recommendations of this committee during the construction and maintenance phase.

3. A Brief overview of P.falciparum Containment Programme under Modified Plan of Operation

3.1 Background Information

3.1.1 On the wake of heavy resurgence of malaria in the country from early seventies, compounded with the problem of serious constraints both in the field of logistics and financial resources and others it was necessary to revise the strategy of NMEP both in technical and operational points of view. Hence the plan came for a switch over to Modified Plan of Operation (MPO) from NMEP with effect from April, 1977.

3.1.2 Meanwhile from a review of the whole malaria situation it is noted that besides rapid escalation of falciparum malaria.

(a) In those areas where the species was known to exist

(b) there was appearance of large scale foci of this species in the areas where P.vivax had been present normally.

It was also evident that in the former areas malaria prevalence varied from moderate to hyperendemicity and transmission is prolonged or perennial with predominance of P.falciparum infection. Furthermore, there are some common features such as the terrain, with hilly areas and forests with difficult accessibility complicated by heavy rainfall. Most such areas are inhabited by tribals of various ethnic groups having their own ethos and dialect which compound the problem of communication.

All along these have been categorised as hard core areas with stable malaria.

3.1.3 In view of operational and other problems, at the very outset these clearly pointed out the necessity of additional in-put at different tiers in the organisation though with some degree of flexibility.

3.1.4 Meanwhile following the successful conclusion of the Small Pox Eradication Campaign the Swedish International Development Authority (SIDA) which had rendered some support, became deeply interested in assisting the Govt. of India in combating the malaria problem at this juncture specially in areas inhabited by Tribal population which is economically the weakest section of the community.

3.2 P.falciparum Containment Programme

3.2.1 Operational Aspect

The additional component which was provided in the hard core areas mentioned above and with intensification, the operation became the key-note to 'P.falciparum Containment Programme' which is built within the framework of M.P.O.

Besides the general objectives defined under M.P.O. such as minimising deaths, ensuring reduction of malaria morbidity and such others, the other tasks assigned under the PfCP are:

(a) To direct the main thrust of the operation in the hard core areas populated mainly by tribal population.

(b) To improve case detection system and laboratory services and to ensure prompt radical treatment.

(c) To strengthen adequate intervention measures under effective supervision and to ensure timely operation.

(d) Considerably improve rapid transmission and analysis of epidemiological information with prompt reporting system to all the concerned echelons.

(e) To accord high priority of activities wherever there is evidence of emergence of drug resistant P.falciparum foci, and to prevent dissemination of such resistance to other parts of the country.

3.2.2 It was also considered necessary that PfCP is to develop some specific Operational Research activities.

3.2.3 Besides, Training Programmes were also incorporated under PfCP, including training of Medical Officers of PHC which under the present context constitutes the main springboard of action.

3.2.4 In view of the enthusiastic approach by the Centre and States during the initial stages it was envisaged that the problem of resurgence with particular reference to falciparum malaria could be contained promptly. The prospect seemed to be brighter on account of the keen interest taken by WHO with the support received from SIDA.

3.3 However during their visits to the programme the members of the Team observed that despite efforts from various quarters, there are a number of shortcomings, some of which had been pointed out on earlier occassions as well, by other assessment teams.

In the present context the Team considered that a realistic presentation on all aspects should help in full appreciation of

and NMEP Units were equipped with suitable laboratory facilities. These helped cross checking activities at,

i) State HQ.

ii) Zonal Tier

iii) At the R.C.O.

3.3.2 Against the above background, the following are noted under MPO.

3.3.2.1 Against an Operational Unit developed on population basis and some basic epidemiological stratification, the M.P.O. Units cover an entire district irrespective of population load, epidemiological strata or operational feasibility.

3.3.2.2 The sub-units ceased to function and all activities were decentralised to PHC level but without much accountability.

3.3.2.3 The laboratory services were established at the PHC with one Technician thus without supervision and functioning in isolation.

3.3.2.4 The only cross-checking mechanism now is based at RCO, which is incapable of dealing with the large volume of blood smears even on a small per centage basis.

3.3.2.5 The case detection system became the responsibility of the PHC. Moreover, geographical coverage in the present context is not feasible because of large number vacancies under the MPW system.

Although the PHC has some overall responsibility, it is not accountable for the quality and coverage.

3.3.2.6 The Zonal tier exists but the Team has great doubts about its capability in the present context and thus usefulness because,

(a) Most of them are untrained/inexperienced and posted for short periods, sometimes on interim basis. Thus there is no sense of commitment.

(b) All administrative powers over the perihperal staff are removed.

(c) Laboratory cross checking activities are no longer their responsibility.

3.3.2.7 The Programme Officer at the State HQ. is the only component at this level without support from other staff provided under NMEP.

4. Intervention measures in PfCP Areas

At the outset it is mentioned that based on experience and consideration of the cost factor, application of indoor residual spraying in rural parts, though restricted to areas with 2 API and above, continues to be the key operation for the control of malaria under M.P.O.

This policy was adopted in PfCP areas as well. The insecticides used are mostly DDT and BHC to some extent.

However, the Team recorded serious shortcomings in the spraying operation both in terms of quality and coverage. The Team noted that to a great extent such a situation exists because of

(a) Inability to meet the technical target because of resource constraints in many states

(b) In some cases the operation becomes ineffective because of delay and breakdown of the activities on account of late release of funds and often on piecemeal basis which is not conducive to follow the time schedule nor the target.

(c) Serious constraints in the organisational aspects on account of vacancy of key personnel at different echelons. This has affected supervision which has been grossly inadequate. Even where personnel are available there is absence of mobility.

(d) Non-compliance of policies laid down relating to spraying activities such as,

i) Multichannel approach

ii) Lack of advance notification system

iii) Co-ordination with the Department of Tribal Welfare and their representatives at all levels in other to improve acceptibility of spraying operation and to minimise the risk of mud plastering.

iv) Non involvement of Department of Forest and other Agencies.

v) Lack of inter-sectorial approach

vi) Incomplete appreciation of the wage structure of labour for spraying operation who are to be treated as skilled labour and thus failure to meet the minimum demands.

4.1 Under the MPO the field activities like intervention measures have been decentralised to the Primary Health Centres with the expectation that the MO, PHC would take active interest. But under the present situation and workload involved in medical care, it is rarely the case, even in respect of those who had been exposed to short orientation course on malaria.

4.2 Considering the points itemised above, the Team expressed its doubt about the degree of commitment of the Government to this health programme under the cost of intervention measures alone is estimated to be about 55 per cent of the entire cost of M.P.O.

5. Epidemiological Surveillance

5.1 Case Detection Procedure is continuing through ACD and PCD with PHC as the base.

However, under ACD the two weekly home visits can rarely be maintained because of large number of vacancies which exist now after introduction of the Multipurpose Workers System. This has raised certain other serious questions. Under the M.P.O. it was envisaged that DDC/FTD should be concentrated more in remote areas, as domiciliary workers may default. But at present there are only a few, voluntary agencies and that the Health Agencies like PHC are not too close.

In many instances the Team noted that PCD agencies are providing effective service and hence it considered as logical to stimulate activities of these agencies.

5.2 Laboratory Services

5.2.1 One of the greatest drawbacks of decentralisation of the laboratory

services to PHC is that only a single technician is working in total isolation. Neither he can consult nor is there anyone to supervise his work.

5.2.2 Though initially it was envisaged that the introduction of MPW scheme, a second technician would be provided besides the one posted to PHC under M.P.O., so far this has not materialised even after a lapse of 10 years.

It is also noted that the specific and urgent recommendations, made by the Technical Advisory Committee five years ago that a Senior Technician was to be provided at the rate of one per 10 PHC (for supervision, cross checking and other assistance) remain ignored.

5.2.3 This aspect has already been presented earlier indicating inherent weaknesses under M.P.O.

5.3 Stains and Staining Process

The In-depth Evaluation Team of 1985 and some of the members of the present Team have been sceptic on the advisibility of the continued use of JSB stain. This is on account of wide variations in the quality of stain and staining of blood smears with J.S.B.*.

To a great extent this is understandable as from all accounts supervision is deficient in the preparation of the stain with reference to,

(a) Procurement of proper material

(b) The required degree of oxidation (polychroming) necessary and the determination of the end point

(c) Maturation before use.

As the stain is prepared at District level full attention can be focussed at this vital aspect.

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* Incidentally, comparative studies on JSB, and other stains, Giemsa had been undertaken over 40 years ago.

6. **Chemotherapeutic Aspect**

6.1 The policy of Presumptive and Radical Treatment has been formulated under the M.P.O. both for areas where falciparum malaria is sensitive or resistant to chloroquine.

However, in areas where the malaria incidence is quite low (with low SPR) there are some doubts in some quarters on the continuation of presumptive treatment. This aspect needs urgent and deeper consideration in the light of emergence of large number of resistant foci believed in some quarters to be because of wide scale drug pressure.

6.2 With regards to Drug Distribution Centres (DDC) and Fever Treatment Depots (FTD), which played an important role at the initial stages, the Team is concerned to note that the number of such institutions have been dwindling down from year to year, despite periodic advice issued from the NMEP Directorate/MOH (see in Annexure), and discussed annually at the Conference of the Malaria and Filaria Workers.

It had been the concensus that the availability of chloroquine at village level had an impact on mortality and morbidity. The In-depth Evaluation Team of 1985 reported "that the chemotherapy provided by drug distribution has indeed had a substantial impact in preventing deaths."

In the opinion of the present Team which studies the problem carefully, there has been dramatic decline of the number of DDC and FTD and it is likely to result in serious consequence on mortality and morbidity.

The M.P.O. has stressed on the importance of people's Participation particularly in this field. The categories of volunteers to be involved particularly the School Teachers have often been stressed in all circulars. Although NMEP Directorate has been periodically urging the States to focus attention to this area, the situation has deteriorated to an extent that the system seems to have collapsed without the necessary support from any quarters.

In this context an urgent review on the regular supply of drugs to voluntary agents is a must. In view of the reduced frequency of visits by the M.P.W. for Active Case Detection, more often than not, the stock of antimalarials at the voluntary centres run short of requirements and, therefore,patients lose interest in these centres. Hence there is need to explore for alternative arrangements for regular flow of the drugs to the periphery.

In this areas the Team studied the role of PfCP personnel. Since they have neither capacity nor authority to establish DDC and FTD, at best they could stimulate the medical officers of PHC to take action. But here again the crux is making drugs regularly available to the agents.

6.3 Emergence of chloroquine resistance P.falciparum and prevention of dissemination of such resistant strains

While reports were forthcoming from neighbouring countries about the emergence of chloroquine resistance, it was not till 1973 when evidence of chloroquine resistance at R II level was noted in two adjoining districts of Assam (Karbi Anglong and Nowgong). However, it was not till 1978, that systematic studies were initiated in this field through monitoring units for undertaking sensitivity tests.

In two PHC of Karbi Anglong of Assam resistance was recorded at R I to R III level in 1978, and the levels seemed to be retained for a few consecutive years. The maximum per cent of R III cases was 16.7.

Incidentally, all these areas had already been brought within the sphere of influence of PfCP. Studies in other PfCP areas indicated resistance mostly R I and R II levels, the same as in many non PfCP districts.

The main concern of NMEP was the risk of dissemination of resistance at R III level from N.E. Zone to other parts because of movement of thousands of itinerant labourers between PfCP Zone-II and Zone-III and on one side and in Zone-I (N.E. Zone)

At the very outset it should be stressed that in view of the very many inherent problems, a study of a programme of this nature needs close scrutiny and for this very purpose the present Team was furnished with a large volume of epidemiological and other data. Although the time assigned to the Team was very short, a few members were in a position to study the data carefully and the report is based on the same observation.

7.2 However, the following important issues should be noted in the Analysis and Interpretation of the data.

(a) The PfCP areas were developed in stages from 1977 to 1981 when all the areas which exist to-day were brought within its zone of influence (see PfCP map attached.)

(b) For various reasons in 1983 there was need for restructuring the operational areas. It is of significance to note that in this process about a fourth of the areas taken up by 1981 was withdrawn from PfCP as the areas had attained the objectives def ined under PfCP.

7.2.1 Analysis of Epidemiological Data

Considering the points mentioned above the progress of the zones of PfCP cannot be measured in the same time scale. Thus in the first instance comparative studies of the Parameters for the entire PfCP areas are presented,

(a) For the year 1987 against 1981 (Table-I)

(b) As well as for 1987 against 1984 as per terms of reference (Table-II).

TABLE - I

Year	ABER	API	AFI	SPR	SfR
1981	11.13	7.83	5.45	7.03	4.90
1987	10.45	5.39	3.94	5.16	3.77
Changes %		-31.1	-27.7	-26.6	-23.0

TABLE - II

Presenting 1987 data against 1984

Year	ABER	API	AfI	SPR	SfR
1984	9.84	6.14	4.56	6.24	4.64
1987	10.45	5.39	3.94	5.16	3.77
Changes %		-12	-13	-17	-23

From Table-I, it is noted that though not commensurate with the time element (7 Years) there had been reduction in API and AfI by about 30 per cent*. There had been somewhat similar reduction in SPR and SfR. Compared to the above the downward trend under Table-II is marginal indicating an almost static condition during the four year period (1984 to 1987), attributed to a few large scale focal outbreaks. But on the whole the overall picture shows that falciparum malaria has been kept contained which has been the primary objective of PfCP.

7.2.2 Zone-wise Analysis

For better appreciation of the actual situation of data have also been analysed, Zone-wise as indicated below. The tables are appended. In these zones the data for 1988**have been compared to that of base line year.

(a) Zone-I, the decline in API is significant and has been somewhat faster than AfI. This is also reflected in the other parameters.

(b) Zone-II, the trend of reduction in API and AfI is somewhat similar but significant.

(c) Zone-III, the decline in API and AfI over the ten years has been by about 50 per cent. To some extent this could be on account of somewhat lower rate of ABER.

* In view of the significant reduction recorded in those areas, which were taken out from the sphere of influence of PfCP from 1983, the decline seen now, would have been somewhat steeper.

** In all the four Zones, data for the entire year 1988 are available.

(d) Zone-IV, compared to the three other zones the downward trend in all parameters has been quite significant specially in terms of API and AfI though the decline in API is somewhat steeper.

7.2.3 Volume of falciparum malaria cases

(a) Comparative studies show that against 1981 and 1984, there has been a downward trend in total falciparum malaria cases in PfCP areas in 1988. This is somewhat slow no doubt but there is positive indications of the same (see Bar Diagram).

(b) Studies have also been made in respect of PfCP data for 1987 against the situation in the rest of the country showing a 15 per cent decline in falciparum malaria (see Pie diagram).

(c) When the situation is studied in non-PfCP areas for 1987 against 1981 it is noted that while there has been appreciable reduction in API per contra there has been a steep rise in AfI (See Table below).

Epidemiological Data in non-PfCP areas

Year	ABER	SPR	SfR	API	AfI
1981	10.08	3.43	0.26	3.45	0.26
1987	9.40	1.79	0.41	1.69	0.38
		-48%	+58%	-51%	+46%

8. Research

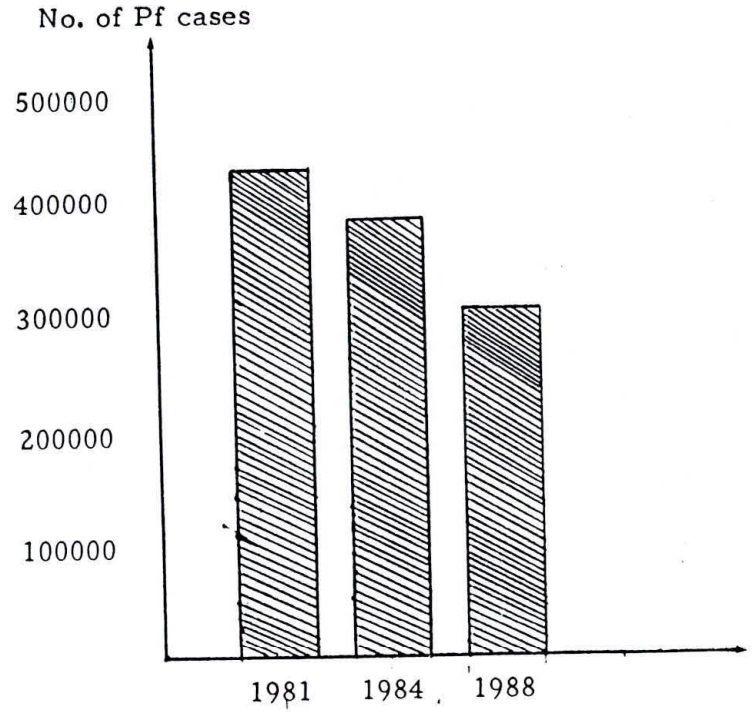
8.1 General Remarks

Modified Plan of Operation has defined Research as one of the supportive processes in the programme and during the initial stage, a number of projects were undertaken after 1978.

Studies on sensitivity of P.falciparum to antimalarials were also emphasised and initially six monitoring teams were provided for the entire country, later increased to 12.

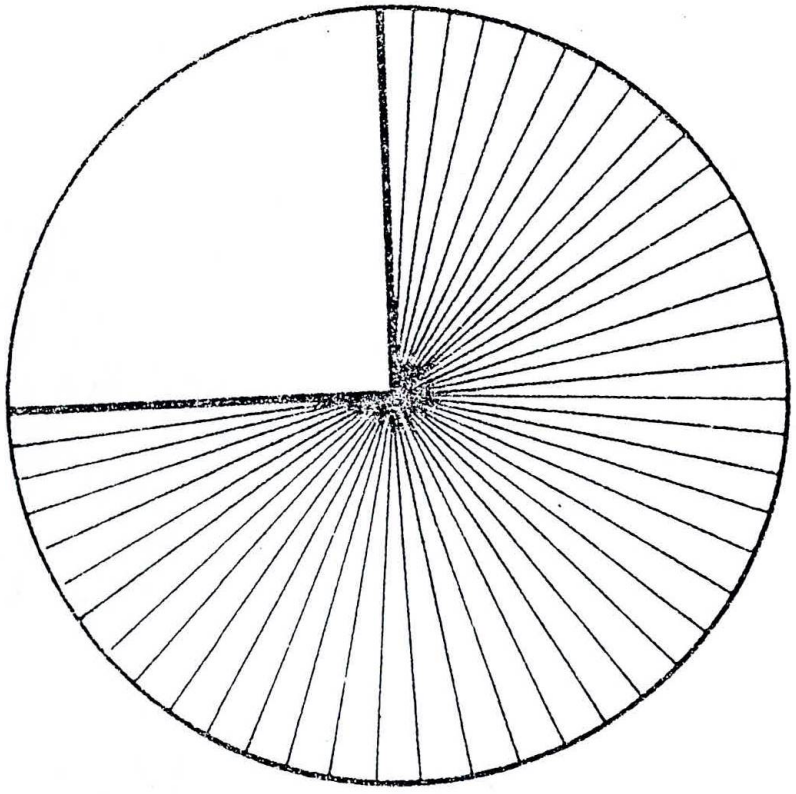
8.2 Two Entomologicl Projects were undertaken, one in Zone-I and the other in Zone-II of PfCP from 1980 onwards.

P.falciparum Incidence
Main Four Zones



P. falciparum INCIDENCE

589591 (INDIA)

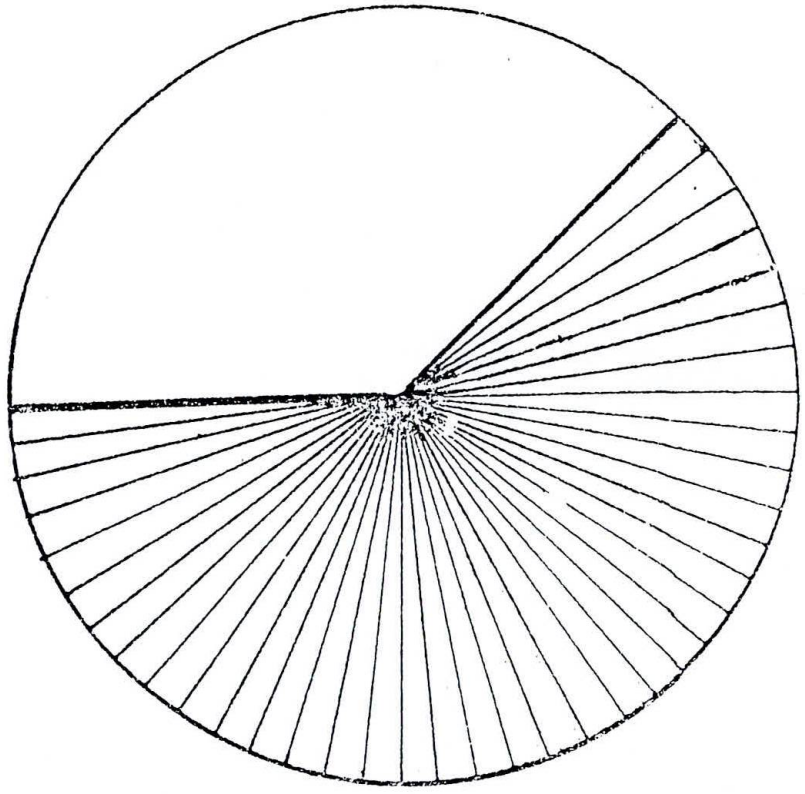


442186 (PfCP)

75%

1981

618574 (INDIA)



372713 (PfCP)

60%

1987

8.2.1 In Zone-I where doubts were expressed in some quarters about the presence of the well known vectors like An. minimus and An.balabacensis (dirus), two Units were established under PfCP, one in Assam/Meghalaya border area, and the other in Nagaland.

The observations are summarised briefly:

(a) In the first unit (kept unsprayed), An.minimus was detected throughout the year. In the forest areas An.balabacensis (An.dirus) also played an important role.

(b) In Unit II established in Nagaland An.minimus played the dominant role but An.balabacensis was not frequently encountered because of large scale deforestration.

(c) Besides, An.fluviatilis was incriminated by both the Units (not reported in N.E. Zone earlier).

(d) As to the bionomics of the species it was noted that both An.minimus and An.fluviatilis are endophilic whereas An. balabacensis is exophilic.

(e) Although a large number of other species were dissected such as An.annularis and An. philippinensis to mention a few none showed infection in either gut or gland.

8.2.2 Zone-II: Its HQ. is at Bhubaneswar, with three Field Units all in Orissa. An.fluviatilis was detected and incriminated in these field stations. An.culicifacies was also established for the first time as a vector in Mayurbhanj District of Orissa.

8.2.3 The Central team at HQ. developed serological technique using Gel Diffusion method to determine the source of blood meals.

8.2.4 As to the susceptibility to insecticides, it was noted that An.culicifacies continued to be resistant to DDT while An. fluviatilis showed 94% mortality.

8.2.5 In summing up the Team noted that:

(a) After many years systematic entomological studies have been taken up under PfCP.

(b) Besides the known vectors, it is for the first time An.fluviatilis has been incriminated as a vector in North East Zone. In the same way An. culicifacies has been found to play an important role at least in some areas of Orissa.

While the Team acknowledged the role of PfCP in undertaking these activities and showing some definite findings, it felt that any further continuation on the same lines would not be meaningful any more. This is particularly with reference to the Entomological Unit in Zone-II.

The team noted that Units under Zone-I are being relocated in other malaria problem areas, where there had been no such activities over a few decades.

8.3 Epidemiological Studies

A few Epidemiological research projects were initially identified such as:

(a) Malaria Mortality and Morbidity studies under different eco-epidemiological strata. One area has been identified in Orissa in Phulbani while the other in Andhra Pradesh in S.Kota area.

Eight rounds of demographic surveys have been carried out in Phulbani and five in the other area. The observations indicate ineffeciency in the case detection system by the multi-purpose surveillance teams. It was also brought to light during mass blood surveys that there were high prevalence of asymptomatic malaria cases. The observations are being continued.

(b). Studies on the Relapse Pattern of P.vivax infection, a project undertaken on the basis of one of the recommendations of a special research committee under PfCP.

A total 500 cases were detected. But the research project could deal with 80% of the patients, half of which received radical treatment with chloroquine single dose and Primaquine for five days while the other half received a single dose of presumptive treatment with chloroquine only. Observations are continuing.

The main objective is to determine the effectiveness of a five days regime of primaquine, the schedule which is being followed for about three decades.

(c) Under PfCP there is another project also supported by SIDA Research Fund on monitoring of chloroquine levels in Plasma. The project initiated shortly at the MRC field Station at Haridwar in Uttar Pradesh, after necessary training of the Research Officer in Sweden and procurement of equipment.

It is added that the intervention measures with alternative methods of bio-environmental control in Kheda was recently assessed In Depth.

8.4 Operational Research on Intervention Measures

During the field visits the Team Members have noted that one of the most disturbing features of the spraying operation besides high refusal rate is the habit of interference with the wall surface soon after spraying operation. This is most common in tribal villages.

However, the Team noted that invariably the ceilings are not disturbed and the insecticide is visible where spraying has been carried out. Considering this observation, the Team recommended strongly that where residual insecticide operation must be carried out, full cognisance be taken of this aspect and a few PHC in every zone in tribal areas be taken up as study areas. The spraying operation could be restricted to aeves and ceilings of the rooms only during both the rounds. The data are to be compared against the neighbouring PHC (comparative study area) where the epidemiological conditions should be of the same level as in the experimental area. The operation in the comparison areas should be according to the routine pattern followed by the State.

In view of the its importance the team felt that this aspect could be taken up immediately prior to the malaria transmission season and continued through December 1989 under the SIDA assistance pattern for research.

9. Training

9.1 Training constitutes a principal component of PfCP

During the initial phase, the training activities were related to the conduct of 4 week courses for District Epidemiologists to be deployed under PfCP. It is meant for fresh medical graduates. Subsequently these personnel were sent for field training in each of the Zones prior to actual posting at district levels to assist the District Malaria Organisation. The total number of courses run were 24 involving 372 participants during a period of 10 years.

But in view of the job insecurity the turn over of such personnel has been enormously high, necessitating continuation of the training programme.

9.2 The PfCP personnel at the HQ. Cell at the NMEP Directorate had also been assisting the National Institute of Communicable Diseases in the conduct of regular courses on Malariology to meet the needs of NMEP.

9.3 Subsequently under the SIDA/WHO agreement a component has been provided for Training of the Medical Officers of the Primary Health Centres, which are the base for all health activities.

During the course of three years PfCP has been able to hold 45 short orientation courses for 799 MO PHC of various PfCP zones.

Committee notes with interest that new educational activities have been taken up by Directorate NMEP during 1988 in conducting 5 workshops to 208 clinicians of Medical Colleges, District Hospitals on management of Severe and Complicated P.falciparum cases and workshop to Engineers of developmental projects which must be continued.

9.4 While appreciating the role played so far as per plan, the Team consider that in order to help in developing the conduct of antimalaria activities under the Primary Health Care System, a large group of personnel engaged in the programme must be given teachers training to build a core of trainers to deal with the increasing number of participants.

The Team therefore feels that,

(a) Not only the training programme for the MO PHC be continued but the tempo has to be increased. For this the pre-requisite is to build a core of trainers.

(b) Attention is also to be focussed to refresher training for those showing substandard performance.

(c) Although training of Malaria Inspectors is the primary responsibility of the Regional Co-ordination organisation, job oriented course should also be held for Multi-purpose supervision.

(d) The Team fully acknowledges the necessity of holding courses for Training the Teachers, to meet the training demands defined above.

(e) In view of ever increasing workload it is most essential that some of the major States should be encouraged to build their own Training Centres for the sub-professional staff as had existed under the NMEP.

Serious note should be taken by the Centre and States on this issue.

10. Manpower

It is generally agreed that there is acute shortage of trained and experienced manpower and that it is one of the most serious constraints under MPO/PfCP.

Initially the possibility of deputation of NMEP personnel from the State for PfCP was explored but only to note the inevitable depletion of State technical resources. This necessitated development by NMEP Dte. of suitable training programme for PfCP personnel with assistance from NICD at the time of recruitment of young medical graduates to work at district levels.

The Team noted with considerable interest that inspite of a very high rate of turnover as mentioned earlier, there is number of experienced personnel under PfCP who have been working for several years, some even for ten.

Therefore, the Team expressed much concern that despite the difficult process of building technical component, now it is most likely to be disbanded soon after withdrawal of SIDA assistance, unless immediate steps are taken to redeploy these personnel for Training, Research and such other activities.

The possibility of their absorption by the State should also be explored, as most of these do not have adequate trained and experienced technical manpower.

ANNEXURE

Directorate of National Malaria Eradication Programme,
Delhi - 110 054.

Role of F.T.Ds and D.D.Cs:

Under the M.P.O. it has been recommended that F.T.Ds and D.D.Cs should be established in rural areas. Directorate NMEP and Ministry of Health and Family Welfare have issued lettters to the States from time to time drawing their attention to energise these voluntary agencies. It was also impressed upon them to instruct peripheral Health Workers to visit the FTD and DDC holders regularly to replenish drugs/slides. Some of the circular letter issued from the Central level to the States are given below as a reference:

1. No. 8-1/80 NMEP Mal. 5.3.80
2. No. 8-1/80 NMEP Asst. 19.6.80
3. No. T.14011/8/83-Mal, dated 17.8.83, from MOH&FW, GOI
4. No. T.14011/1/84 Mal, dated 15.2.84, from MOH&FW, GOI
5. No. 4-40/82-NMEP(Asstt)/Genl. dated 12.8.83 from Dte. NMEP.
6. No. 8-1/86-NMEP(Asstt.) dated 17.9.86 from Dte. NMEP.
7. Besides stressing the importance of establishing these Centres at every Annual Conference of Malaria and Filaria Workers

APPEENDIX

Date for 1988 against the base line year of the Zone

(a) Zone-I:

Year	ABER	SPR	SfR	API	AfI
1977	7.84	7.68	3.43	6.02	2.69
1988	8.94	3.69	2.12	3.30	1.90
Variation	14	-52	-38	-45	-29

(b) Zone-II:

Year	ABER	SPR	SfR	API	AfI
1979	13.55	11.04	8.11	14.96	10.99
1988	12.61	6.86	5.71	8.65	7.20
Variation	S	-38	-30	-42	-35

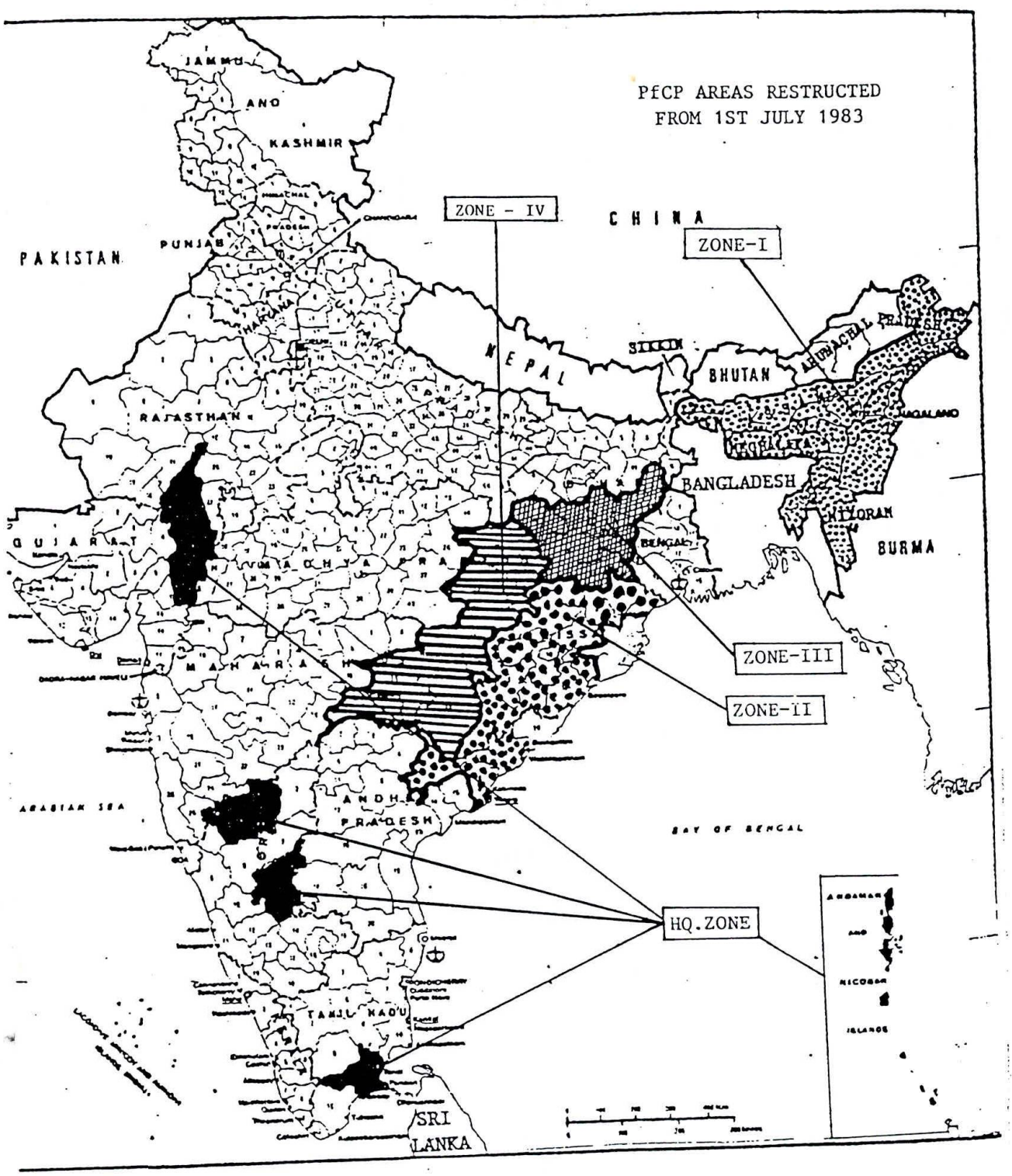
(c) Zone-III:

Year	ABER	SPR	SfR	API	AfI
1979	7.46	5.15	3.03	3.84	2.26
1988	5.12	3.65	2.12	1.87	1.09
Variation	-31	-29	-30	-51	-52

(d) Zone-IV:

Year	ABER	SPR	SfR	API	AfI
1979	13.32	10.38	5.12	13.82	6.81
1988	12.38	3.73	2.67	4.62	3.30
Variation		-64	-48	-67	-52

INDIA


PfCP AREAS RESTRUCTED
FROM 1ST JULY 1983
ZONE - IV
ZONE-I
ZONE-III
ZONE-II
HQ.ZONE
CHINA
PAKISTAN
NEPAL
BHUTAN
BANGLADESH
BURMA
SRI LANKA
ARABIAN SEA
BAY OF BENGAL
JAMMU AND KASHMIR
PUNJAB
HARYANA
RAJASTHAN
GUJARAT
MAHARASHTRA
ANDHRA PRADESH
TAMIL NADU
SIKKIM
MEGHALAYA
MIZORAM
BENGAL
ANDAMAN AND NICOBAR ISLANDS