Present Status of Malaria in Nepal

Dr. G. M. Sakya*

1. Background:

1.1 Problem: Prior to the initiation of anti-malaria activities in mid 1950s', Nepal had an estimated two million cases of malaria annually with as much as the ten percent of them dying of the disease. Large areas of fertile land was uninhabitable mainly due to the prevalence of the disease. Two anti-malaria projects were initiated-one in 1954 and other in 1956 to control the disease. These two projects were amalgamated to form Nepal Malaria Eradication Organisation in 1958.

1.2 Progress: The organisation was able to operate an effective nation-wide anti-malaria program. As a result, a large area of land was practically freed from the disease by the end of 1960s'. In the year 1970, there were only 2,500 cases of malaria, the lowest annual case incidence ever recorded in the country. Large scale resettlement in original malarious areas took place in this period.

1.3 Resurgence: Malaria cases began to rise slowly in early 1970s'. By the year 1974, there were already 14,700 cases. In the meantime technical and financial problems cropped up in the Organisation. The aim of eradicating the disease from the country by 1973 could not be materialized nor was it possible to fix some other target date for the future.

* Deputy Chief Officer, Nepal Malaria Eradication Organisation., National Headquarters, Baneswar, Kathmandu.

1.4 Change in strategy: By 1974, it was fully realised that eradication of malaria was not possible in near future. The best thing under the circumstances was to change the strategy from eradication to control. So, the eradication strategy was abandoned and malaria control program was formulated in 1975. The immediate aim of the control program was to maintain the gains made by the eradication program and improve the situation as much as possible with the available resources. The methodologies of control program, however, remained the same as in malaria eradication program but in modified forms.

1.5 Impact of change in the strategy: The initial impact of change in the strategy was favourable. The number of malaria cases went down from 14,700 in 1974 to 12,370 in 1975 and 10,123 in 1976. However, the cases began to rise again to 11,972 in 1977, 14,212 in 1978, 12,992 in 1979 and 13,033 in 1980.

2 Malaria situation in 1980: The total number of malaria cases recorded from all sources in the country in the year 1980 was 13,033. Out of this total, 10,534 were detected by Nepal Malaria Eradication Organisation (NMEO) and 2,499 by Community Health and Integration Project (CHIP).

Table 1.

	1978	1979	1980
1. Total population of the country	13,500,000	13,800,000	14,100,000
2. Population at malaria risk	7,850,000	8,046,791	8,554,317
(a) Population covered by NMEO	5,577,630	5,759,863	6,175,017
(b) Population covered by CHIP	1,622,655	1,719,300	2,200,000
3. Total no. of blood slides collected	1,579,392	1,432,633	1,161,739
(a) NMEO	1,412,939	1,290,935	1,161,739
(b) CHIP	166,453	141,698	144,940
4. Total no. of positive cases	14,212	12,992	13,033
(a) NMEO	11,050	10,671	10,534
(d) CHIP	3,162	2,321	2,499
5. Total no. of <u>P. falciparum</u>	1,457	1,567	911
6. Total no. of Indigenous cases	7,230	6,791	7,377
7. Total no. of Imported cases from abroad	4,256	3,911	3,452

8. Annual Blood Examination Rate (ABER)

(a) NMEO	17.1	15.8	15.0
(b) CHIP	8.0	7.0	6.0

9. Annual Parasite Incidence (API)

(a) NMEO	1.72	1.58	1.57
(b) CHIP	0.97	1.42	1.12

10. Slide Positivity Rate (SPR)

(a) NMEO	0.73	0.75	0.83
(b) CHIP	1.89	1.63	1.72

2.1 Epidemiological information: The epidemiological information of malaria of the country in the year 1980 as against 1979 and 1978 is summarised in Table 1.

It is seen from the Table that the number of malaria cases is slightly higher in 1980 as compared to 1979. *P. falciparum* infection is markedly reduced, but the number of indigenous cases have increased by 14% on 1979. The ABER continues to be higher than the standard rate (10%) in NMEO areas while it is lower in CHIP areas. Imported cases from abroad have continued to decline by a further 12 percent in 1980. The increase of indigenous cases have mainly occurred in nine border districts of terai namely, Dhanusha, Mohottary, Sarlahi, Rautahat, Bara, Parsa, Nawalparasi, Rupandehi and Kapilbastu. Districtwise malaria cases in the year 1978, 1979 and 1980 is given in annex. In those nine districts, the proven vector of malaria transmission is *A. annularis* which is highly resistant to D. D. T. The alternate insecticide, Malathion was used only in a limited area in 1980.

2.2 Malaria situation in nine terai districts. Although the population of the nine districts is about 30% of the total population of the malaria risk areas, the number of cases in those districts constitute about 57% of the total cases in 1980. The corresponding figure for 1978 and 1979 is shown in Table 2.

Table 2.

Year	Total cases of the country	Total cases of 9 districts	Percentage
1978	14,212	6,945	48.8
1979	12,992	6,386	49.2
1980	13,033	7,490	57.5

3. Anti-malaria activities undertaken in 1980:

3.1 Spraying operation: All the localities of terai and innerterai with API 0.5 or above were covered by D. D. T. / Malathion once or more depending on the length of transmission season of the area. In the hills, localities with API 1. or more were sprayed with D. D. T. once a year. Population covered by the spraying cycles were 1.2 million in March-April, 1.5 million in May-June and 0.97 million in August-Sept. Population covered by malathion (133,913) is included in above figure.

3.2 Surveillance: 7.9 million population were under active malaria surveillance. Passive case detection was negligible. Epidemiological investigations, radical treatment and follow-up of all confirmed cases were done.

3.3 Laboratory: 1.2 million blood smears were examined by 138 laboratory technicians distributed in 38 district laboratories and sub-laboratories. The cross check error rate of the technicians were negligible.

3.4 Entomological studies: Malarious areas of Nepal was restratified entomologically into different areas of receptivity based on prevalence of vector species and their transmission potential on ecological criteria. Quarterly entomological observations were carried out in selected villages to study the dynamics of transmission in such areas. A limited number of susceptibility tests were carried out. *A. fluviatilis* the major vector was susceptible to D. D. T. *A. Annularis*, the proven vector of some terai districts was highly resistant to D. D. T. but susceptible to malathion. *A. maculatus*, the proven vector of high altitude areas was susceptible to D. D. T. *A. minimus*, the main vector before the spray era had not made a come back yet.

Annex—1.

District-wise malaria cases in the year 1980 as against 1978 and 1979. The figures in bracket are the cases detected from high altitude areas above the NMEO operational boundary line.

District	Population* (1980)	Total cases		
		1978	1979	1980
1. Panchthar	59,499	231 (84)	224 (134)	205 (84)
2. Ilam	85,445	132 (28)	117 (30)	91 (11)
3. Jhapa	365,326	531	734	551
4. Morang	425,837	469	699	494
5. Sunsari	267,079	248	345	391
6. Dhaukutta	71,494	244 (83)	150 (139)	151 (74)
7. Bhojpur	77,659	203 (455)	146 (434)	112 (277)
8. Khotang	70,678	70 (182)	59 (175)	31 (118)
9. Udayadur	109,191	118 (9)	198 (22)	171 (9)
10. Ramechhap	81,559	35 (60)	27 (50)	28 (44)
11. Sindhuli	118,200	135 (1)	99 (2)	106 (1)
12. Dhanusha	397,773	744	705	869
13. Mahottary	340,900	850	1,149	1,578
14. Sarlahi	300,177	435	620	899
15. Makawanpur	158,447	116	99	62
16. Chitwan	272,102	316	293	266
17. Kavre	958,038	98 (130)	75 (75)	88 (69)
18. Dhading	229,120	211 (38)	150 (26)	151 (22)
19. Kapilbastu	279,702	634	611	558
20. Rupandehi	361,988	1,040	856	884
21. Nawalparasi	267,184	370	369	552
22. Palpa	140,591	23 (66)	141 (64)	127 (56)
23. Tanahu	187,647	188 (6)	258 (9)	152 (5)
24. Lamjung	74,635	103 (16)	63 (9)	53 (3)

District	Population* (1980)	Total cases		
		1978	1979	1980
25. Gorkha	131,311	155 (20)	152 (28)	137 (34)
26. Dang	250,706	362	225	191
27. Banke	172,229	152	153	134
28. Bardia	180,451	155	60	23
29. Surkhet	121,134	303	143	154
30. Kailali	210,155	204	139	201
31. Kanchanpur	162,730	655	304	224
32. Baitadi	107,686	111 (41)	69 (42)	63 (30)
33. Parsa	234,439	1,126	489	340
34. Bara	287,629	1,026	669	791
35. Rautahat	303,533	720	918	1,019
36. Siraha	329,130	58	8	15
37. Saptari	340,981	18	21	70
38. Kaski	207,502	214	216	264

* NMEO population enumeration covers areas under malaria risk only.