

Malaria : Nightmare of Millions

People should be made conscious of the environmental health problems and the out-break of communicable diseases, like malaria. However, research has to be carried out in developing an anti-malaria vaccine, so that immunisation is possible as in the case of small pox, says Miss K. BISWAS in this informative article.

MALARIA, considered one of the major public health headaches in the world, was believed to have been rooted out of India during the sixties. In fact, the incidence of malaria which used to be 75 million cases per year in 1952, i.e. 22 lakh cases in a million population, was brought well under control and was reduced to 0.1 million cases in 1965. This was not a mean achievement and hence gave rise to high hopes that the disease could be totally eradicated from the country. However, the hopes were soon belied as the eradication programme suffered a severe jolt.

There has been a resurgence of malaria since 1965 causing great concern to the public health authorities. From a bare one lakh in 1965, with no death reported, the number of malaria positive cases began to increase as if in a geometrical progression. The incidence started rising year after year—reaching nearly 7 lakhs in 1970, 14 lakhs in 1972, 31.6 lakhs in 1974, 51.66 lakhs in 1975. Though no death was reported in the year 1965, there were three deaths due to malaria in 1974 and as per records, 99 people succumbed to malaria in 1975.

The spectre of malaria as a public health monster is on the wings. The World Health Organisation has forecast an alarming increase in its incidence in the country. It is feared that there may be about 12 million cases by the end of the decade with a likely death rate of four lakh per year. The prediction is causing a little more concern as the children are found to be much more susceptible in the current phase of the epidemic in India. Out of the 99 deaths due to malaria reported in 1975, the percentage of child casualty was more than 40.

The History

Tracing back the history of malaria incidence in the country, it is seen that in the post-partition period about 7.5 crores of people suffered from malaria annually of which more than one per cent could not survive. Another 88 lakh died of secondary effects due to malaria. This large number of deaths and suffering had a direct impact on the country's economy through loss of manpower and decreased production, in the industry as well as in the agricultural field. The total economic loss was to the tune of Rs. 750 crores a year.

Faced with morbidity, mortality and economic loss and realising the gravity of the problem, a 'National Malaria Control Programme' was launched by the

Government of India as per recommendation of the Bore Committee. The scheme was initiated in 1953 with 390 malaria control units functioning during the First Five Year Plan to combat the situation. The objective was to bring down the incidence of malaria to such a low level that it would no longer pose a threat to the country.

The programme (NMCP) went well and the early results were quite encouraging. The number of malaria cases was on the wane and the child spleen rate was also on the decline. Parasite infection rates in infants were also found to drop down heavily. These initial successes prompted the Government to switch over from a Control Programme to a time-bound National Malaria Eradication Programme in the year 1958. The objective was to eliminate malaria completely from the country by spraying insecticides (e.g., D.D.T.) and treating the cases.

The new programme was undertaken and the annual incidence of malaria was reduced drastically from 75 million in 1952 to about 0.1 million in 1965. There were fewer deaths due to malaria. The emerging picture was quite satisfactory. However, owing to complacency, world-wide inflation, economic and energy crises and other socio-economic factors, the programme sustained a severe set-back. The incidence of malaria has been showing steady increase and is going to assume a menacing dimension, if not taken proper care of.

It is now proposed to examine the efficacy *vis-a-vis* the implementation of the existing Eradication Programme:

The Eradication Programme : For the purpose of malaria eradication, the country has been divided into units comprising approximately a million population each. There are at present 39325 NMEP units functioning in the country covering a population of 574 million, leaving apart the 30 million people who live in high altitude and in areas which have never been malaria endemic. The programme has been taken up in three phases—Attack, Consolidation and Maintenance.

(1) The Attack Phase

In this phase, insecticide (D.D.T.) is sprayed on cattle and human dwellings at the rate of 1000 mg. per m² twice a year. Surveillance is employed at an interval of two years to detect out the cases with fever. Chloroquine is distributed as treatment. One surveillance worker looks after a population of 10,000 and he/she is expected to visit the houses in his/her area once in a fortnight. Malaria positive cases are thus detected out and treated properly.

(2) The Consolidation Phase

The strategy is changed in respect of the areas where the number of malaria cases are recorded as less than 100 per million. Malaria workers in such areas are allowed to move on from the attack phase to the con-

solidation phase as the spraying of insecticide is gradually withdrawn and instead surveillance (both active and passive) is adopted.

(i) In active surveillance, surveillance workers are required to be on the lookout for malaria cases in the community by domiciliary service. If cases are detected with fever, the workers are expected to collect blood film and give a single dose of antimalarial drug. If the blood film shows positive for malaria parasite, then the surveillance worker should visit the malaria-affected houses once more and supply antimalarial drugs for five days. Such cases have to be referred for epidemiological investigation.

(ii) In passive surveillance, records of malaria cases as obtained from the various other health agencies, e.g., hospitals, primary health centres, dispensaries and from private medical practitioners are scrutinised. Blood slides are taken from all fever-cases and a single dose treatment is generally administered to the victims if the malaria positive parasite is found in the slide. The result is passed on the passive surveillance worker for active treatment and epidemiological investigation.

(iii) *Presumptive and radical treatment*: Presumptive treatment reduces the infection to mosquito and thereby lessens the chance of transmission of infections to human beings. Radical treatment is meant for the positive malaria cases after the result of blood film study is known. Ordinarily, each and every fever case is given a single dose of anti-malarial drug (Chloroquine). The treatment is continued as tabulated below:

CHLOROQUINE

Age Group (years)	Permissible dosage in mgs.	No. of Tablets with 150 mg. base
0-1	75 mg	$\frac{1}{2}$
1-4	150 mg	1
4-8	300 mg	2
8-14	450 mg	3
14 and above	600 mg	4

The drug should not be taken on empty stomach. Single dose is sufficient for clinical cure of malaria fever.

PRIMAQUINE

Age Group (years)	Dosage in mgs. (daily single dose)	No. of tablets with 2.5 mg base.
0-1	Nil	Nil
1-4	2.5 mg	1
4-8	5 mg	2
8-14	10 mg	4
14 and above	15 mg	6

The drug should be administered for five days only. It should not be taken on empty stomach and should not be given to infants and pregnant women.

(iv) *Epidemiological investigation*: It is necessary to find out the focus of infection in the surrounding population when there are reports of occurrence of more than one case during the preceding 15 days in an area.

(v.) *Remedial measure*: Spraying in and around the affected area is maintained. Radical treatment is continued for all the malaria positive cases.

(3) The Maintenance Phase

When eradication is achieved, a transition in phase from consolidation to maintenance is made effective. If the indigenous transmission is intercepted in any part of an area in the consolidation phase, that area is allowed to enter the maintenance phase. The phase of maintenance lasts as long as malaria exists in the world. Surveillance is withdrawn and vigilance employed.

The programme was expected to be implemented as per schedule. There were initial successes too. However, these successes did not last long and the programme suffered a severe set-back.

Reasons for Set-Back

(i) The supply of insecticide was irregular and inadequate. It was not possible to spray D.D.T. as per schedule and the focal out-break could not be attained.

(ii) The cost of insecticide increased heavily in the wake of the global energy crisis and consequent rise in prices, for oil and oil-products.

(iii) The vector developed resistance to insecticides.

(iv) Other factors, e.g., inadequate staff, complacent attitude, peculiar social customs, inadequate transport and lack of other relevant facilities.

Confronted with the setback and the revival and continued onslaught of malaria, the Government of India appointed two Committees—the Second In-Depth Evaluation Committee in 1973 and the Consultative Committee of Experts in 1974—to suggest remedial measures. Reports were submitted by both the Committees in 1974. An immediate shift in objective from eradication to effective control was recommended by the Evaluation Committee. It was also recommended that the insecticidal spray should be carried on at places where this communicable disease might be found to reappear. The Consultative Committee endorsed this shift in approach. It also stressed the need for epidemiological research.

Modified Plan

The recommendations of the two Committees and the availability of resources, taken together, have paved the way for a modified plan with three pronged approaches—governmental efforts, people's participation and research on malaria. The objectives are: (i) to prevent deaths due to malaria, (ii) to maintain the rate of industrial development and that of agricultural productivity and (iii) to retain the achievement gained so far. The plan is expected to be implemented during 1977-78.

Malaria is, so to say, a man-made problem since man is responsible for creating malarigenic conditions by neglecting arrangements for proper drainage of water pools. Stagnant water pools are the main sources of mosquito breeding. If this accumulated water is drained out or treated with chemicals to break the ten-day life-cycle, from the egg stage to the adult stage, of mosquitoes, the problem becomes easier to tackle. People's participation is also essential in the distribution of anti-malarials and in the spraying of insecticides.