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PROGRESS REPORT ON MALARIA ERADICATION IN INDIA WITH A STRESS ON THE MEASURES TAKEN AGAINST FRONTIER MALARIA PROBLEMS

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I. BACKGROUND

In view of the extremely high incidence of malaria and the consequent human sufferings and economic loss to the country, the need for effective control of malaria was an accepted fact, but in the absence of adequate knowledge regarding control of the disease, which would be economically feasible, the activities in the earlier days were restricted to a few urban areas only and could not be extended to rural areas. Of necessity the programme aimed at anti-larval measures though pyrethrum was also in use in some places. With the advent of residual insecticides, pilot projects for malaria control with DDT were initiated in some of the States in the country from 1946, and by 1952, about 30 million people were afforded protection. These pilot projects demonstrated the possibility of large scale control of malaria in rural areas within the economic means of the country. Meanwhile, the Indo-American Point Four Programme afforded an early opportunity to launch a nation-wide campaign against malaria. The country was also fortunate in having a number of experienced malariologists besides a centre (Malaria Institute of India) which could undertake a continuous training programme to meet the requirements of the programme.

II. THE NATIONAL MALARIA CONTROL PROGRAMME

Accordingly the Government of India in consultation with the State authorities initiated a nation-wide campaign from April 1953. The programme was operative for five years from 1953/54 to 1957/58. During this period 200 units were allotted in a phased manner, each unit designed to afford protection to a million people. The areas most affected received the highest priority. At the end of the five year period 193 million people received protection and the proportional case reduction in 1957/58 was noted to be lowered by about 60%, as compared to data available for 1953. The various malariometric indices were also lowered by 52% to 79%.

The programme was assisted mainly by U.S.T.C.M. in the form of material, equipment, transport, etc., and to some estent by UNICEF and Rockfeller Foundation. An amount equivalent to about US $ 49 millions were spent during the period of five years, and this included contributions from international agencies.

III. THE NATIONAL MALARIA ERADICATION PROGRAMME.

1. Plan and Phasing

In 1958 the Control Programme was switched over to one of eradication on account of a number of urgent considerations, the most important of which was the apprehension of development of resistance in vectors to insecticide in use. The campaign was to run for a period of eight years (three years in the Second Plan and for the entire Third Plan period), and it was to cover the entire population in the country. In view of the experience gathered during the control programme, the preparatory phase (as per classical pattern) was omitted and provision made for the attack phase to last for three to five years, depending on the endemicity of the area.

During the first two years the programme was phased and 230 units were established to cover the entire endemic areas in 1958/59, and another 160 units in 1959/60 for the hypo-endemic parts of the country. Thus 390 units were established by the end of the second year. During this period the main activity was directed to intensive spray operations and evaluation by epidemiological survey. The data available on these surveys indicated that although the incidence had been lowered considerably, there were still a number of foci of varying size. During 1960 spraying operations were intensified further to liquidate such pockets. All endemic areas received normally two rounds of spraying, and the dose per application was 100 mg. per sq. foot. In some areas where the foci had been detected provision was made for a third round. Although the original provision envisaged only one round of spraying in all the 160 units, such frequency was later changed to two rounds in respect of 20 units while 140 units continued to spray only once. The timing of spraying operations was adjusted strategically according to local transmission season. Surveillance operations were initiated in 344 units in 1960, the third year of the attack phase. Another 20.5 units commenced operations from late 1961, so that by the end of the year all the 364.5 had initiated this aspect of the programme as per plan. As had been envisaged earlier, the rest of the units, namely 25.5, are not required to commence this phase till later on, on account of a number of factors involved. Five of these are operating under operationally difficult conditions and spraying operations were initiated fairly late. Unless total coverage (both in quality and quantity) is ensured it would not be desirable to initiate surveillance operations at this stage. The other 20.5 units are operating in areas bordering the neighbouring countries, such as Pakistan, Nepal, Burma, etc. However, the plan of operation makes provision for initiation of surveillance as soon as eradication activities are initiated in full measure in the border areas of the neighbouring countries. According to a recent agreement during the annual Malaria Coordination Meeting of the participants from Burma, India and Pakistan, held in November 1961 at Aijal in India, it was considered necessary that surveillance

operations in units operating along the Burma border should initiate this phase of the programme from early 1963. Perhaps the same could be done in respect of some more units operating along the Pakistan border.

2. The Organizational Set-up

2.1 State: There are fifteen major States and seven Union territories. Allotment of units are made according to population. Besides the State malariologist attached to the office of the Director, Health Services, there is one zonal officer for effective supervision over five to ten units depending on terrain, communications, etc.

2.2 The National Malaria Eradication Programme Directorate under the Ministry of Health came into existence from 1958. The Directorate has six Regional Coordinating Organizations, located in different parts of the country. The operational ambit of each region extends over two to three States.

2.3 There are about 48,000 technical and sub-professional staff in the entire country engaged in the programme. During the period of spraying operations, the total number deployed is about 150,000.

3. Training Programme

A total of 429 medical officers were imparted training at the Malaria Institute of India from 1958. During this period 1699 inspectors and 896 microscopists had been trained at the Malaria Institute of India, the Regional Coordinating Organization and at the State training centres.

4. Data

By the end of 1961, the proportionate case rate was noted to be lowered to 94% as compared to data available for 1953. The various malariometric indices collected till early 1961 showed a reduction by 95% to 97%. Under the case detection procedure 11.7 million smears were examined in 1961 of which 33,114 were found to be positive (0.28 per cent of all fever cases).

5. Independent Appraisal and Withdrawl of Spraying

After an operational period of three to four years under the attack phase, the conditions have become favourable for 140 units covering a population of approximately 147 million to enter into the consolidation phase from 1962/63. While spraying operations will be withdrawn from these units the surveillance operations will be intensified still further in these areas. This transitional phase being the most crucial period of the entire operation, six Independent Appraisal teams were appointed to assess the progress. The members (18) of the teams were composed of national (not connected directly with the programme) and international personnel (WHO and T.C.M.). The teams were guided by three consultants (from national and international agencies) not associated directly with the programme.

6. Financial Implications

During the first three years of the eradication programme the total expenditure involved was equivalent to about US $ 91 million. This included a substantial share in materials, equipment, transport, etc., from U.S.T.C.M. (US AID). The assistance received from WHO consisted of part supply of DDT, microscopes, Advisory teams, partial payment of salaries of Regional Coordinating Organization staff, expenditure in connection with Conference participants, training and WHO fellowships.

A sum of Rs. 53 crores (equivalent to US $115 million) has been allocated for the programme for the five years from 1961/62 to 1965/66. The programme would be continued to be assisted by USA AID and WHO.

IV. PROBLEMS IN BORDER AREAS AND COORDINATION MEETINGS

As indicated above, 390 National Malaria Eradication Programme units have been functioning in the country out of which surveillance operations have been established in 364.5 unit areas. 25.5 unit areas designated as border and problem area units have been excluded from surveillance operations. Out of these 20 unit areas have been demarcated along the international borders with West Pakistan, Nepal, East Pakistan and Burma. Due to constant influx of infected persons across these international borders, it was considered at the time the plan was drawn; that, surveillance operations in the areas would be ineffective till the malaria eradication in neighbouring countries reach such a standard as to make surveillance operations feasible. As at present envisaged, spraying operations are to be continued till 1964/65 along these borders over 20 unit areas covering a population of about 20 million. However, surveillance operations in some of the border unit areas may commence earlier if the malaria eradication campaign in the countries across the border reach an advanced stage. In view of these considerations international meetings are held every year to discuss the mutual problems and solve all issues.

The question of inter-country antimalaria coordination conferences with countries adjoining India was taken up in 1956 and WHO took active interest in convening such border meetings. Accordingly, the Coordination conference of India and Burma border meetings are being held alternately in India and Burma to review the progress of malaria control and later malaria eradication operations in the border areas and make necessary recommendations. The Pakistan representatives participated in the last two meetings held at Mandalay in Burma and Aijal in Assam, India.

A similar border antimalaria coordination conference between India and Nepal was held early in 1961 at Lucknow, India, and the second meeting is due to be held in July 1962 in Nepal.

These meetings were of immense value and helped materially in the progress of the eradication programme in the different countries. Further they afforded excellent opportunities to discuss mutual problems and understanding the view point of the workers from either side of the international border.

V. FUTURE PLAN

During the first year of the Third Plan, 1961/62 (the fourth year of the eradication programme) all 390 units continued spraying operations, while 364.5 were engaged in surveillance procedures.

In view of the recommendations of the Independent appraisal teams 140 units have entered the consolidation phase during the durrent year (1962/63). Areas for future spray withdrawal (pre-consolidation areas) have already been defined for the next year. This includes 174 units where both spraying and surveillance operations are being intensified so that the majority of the units are able to meet the criteria for withdrawal and enter into the consolidation phase from next year. It is expected that by the end of this year 280 to 300 out of 390 units will be in the consolidation phase.

Areas have also been demarcated where eradication is likely to be achieved by the end of 1963. The total number of units likely to be included would be between 50 to 70 (approximately 60 to 80 million people).

Although tentative plans exist for periods beyond 1963, much would depend on the intensity of efforts toward the final goal. It should however, be stressed that in a biological programme of this nature the plan of operation should be made flexible to adjust against the needs of a particular area or the time. This aspect is being kept continuously in mind under the Indian Programme. However, broadly speaking it is likely that malaria eradication could be achieved from the major part of the country by the end of 1965/66.