NATIONAL ANTI-MALARIA PROGRAMME

Malaria is one of the major communicable diseases affecting mankind, caused by Plasmodium parasite, transmitted by the bite of infective female Anopheles mosquito. There are four plasmodium species, P vivzx (Pv), P falciparum (Pf), P malarie (Pm) and P ovale (Po).

Burden of Disease

Recent estimates indicate that there are approximately 300-500 million clinical cases and between 1.5 – 2.7 million deaths occur every year due to malaria worldwide, 90% of which occur in tropical Africa, south of the Sahara, mostly caused by P falciparum (Pf). There are about 100 countries or territories in the world considered as malarious and more than 2400 million of the world's population are still at risk. Resistance of P falciparum to chloroquine is now common in practically all malaria endemic countries in Africa. Resistance to Sulfadoxcine/pyrimethamine is widespread in South-east Asia and South America. Mefloquine resistance is now common in the border areas of Thailand with Cambodia and Myanmar. Resistance of P vivax to chloroquine has now been reported from Indonesia, Myanmar, Papua New Guinea and Vanuatu.

Urban and periurban malaria are on the increase in South Asia and in many states of Africa. Military conflicts, wars, civil unrest, along with unfavourable ecological changes, have significantly contributed ot the malaria epidemics in vulnerable populations and areas. Another disquieting factor is the re-emergence of malaria in areas where it had been eradicated or its increase in countries where it was nearly eradicat4ed.

In India, there are approximately 1.1 million positive cases reported in 2000. P vivax is the commonest (60-70%) followed by Pf (30-45%), P malariae species is rarely found and P ovale is not found in India. P falciparum is a malignant variety of malaria as 0.5% to 2% may develop complicated malaria, of which up to 50% are fatal, if timely treatment is not commenced. All malaria mortality is due to Pf only. A single dose of chloroquine may save the life by averting complications.

Economic loss

The estimates of labour days loss due to malaria amount to 1328.75 million man-days per year. The total expenditure incurred on morbidity due to malaria is Rs. 7.18 per capita per annum. The annual economic loss due to malaria is approximately Rs. 76,660 million (Sharma et al. 1996).

National Anti-Malaria Programme

Malaria is one of the serious public health problems in India. At the time of independence malaria was contributing 75 million cases with 0.8 million deaths every year prior to the launching of National Malaria Control Programme in 1953. A countrywide comprehensive programme to control malaria was recommended in 1946 by the Bhore committee report that was endorsed by the Planning Commission in 1951. The national programme against malaria has a long history since that time.

In April 1953, Govt. of India launched a National Malaria Control Programme (NMCP) with the following objectives:

1. To bring down malaria transmission to a level at which it would cease to be a major public health problem; and
2. Thereafter an achievement was to be maintained by each state to hold down the malaria transmission at low level indefinitely.

Strategies under NMCP were:

1. Principal operational activities under the control programme comprised of residual insecticide spray of human dwelling and cattle sheds;
2. Malaria control teams were organized and directed by the state anti-malaria organization to carry out surveys and to monitor the malaria incidence in the control areas; and
3. Anti-malarial drugs were made available for patients reporting to an Institution.

Modified Plan of Operation (MPO)

In 1977 attempts at malaria eradication were given up and under the review policy, a Modified Plan of Operation (MPO) was adopted.

Objectives

1. Elimination of malaria deaths
2. Reduction of malaria morbidity
3. Maintenance of the gains achieved so far by reducing transmission of malaria

Areas were divided on the basis of API into two groups and separate strategies were suggested accordingly.

Urban Malaria Scheme (UMS)

The proposal of urban malaria scheme (UMS) was sanctioned in 1971 when it was realized that urban malaria was a significant problem and if effective anti-larval measures were not undertaken in urban areas, the proliferation of malaria cases from urban to rural might occur in a bigger way. In this scheme all the towns having more than 40,000 population and showing more than 2 API in last 3 years are to be covered. At present 131 towns and cities in 19 states and union territories are under the UMS.

Malaria Action Programme

Due to occurrence of many epidemics of malaria in the country, an expert committee was formulated to identify epidemiological parameters for high risk areas. Following areas were identified:

Problem Area

A. Hardcore areas (Tribal Areas)
B. Epidemic Prone Areas
C. Project Areas
D. Triple Insecticide resistant Areas
E. Urban Areas

Revised Control Strategy

The expert committee has considered the revised Global Policy for Malaria Control of the WHO and suggested strategies for India according to the problem area.
Malaria week is being observed every year from 1st MAY to 7th May .

Enhanced Malaria Control Project (EMCP)

Enhanced Malaria Control Project was launched in April 1997 with the assistance of the World Bank. This is directly benefiting the six crore Tribal Population of the eight peninsular states covering 100 districts and 19 urban areas. However, the population living in other malaria endemic areas is also benefited, as the strengthening of the components of IEC, Training and Management Information System have covered the entire country.

Selection of PHCs is based on:

i) Annual Parasitic Incidence (API) is more than 2 for last 3 years;
ii) Pf cases are more than 30% of the malaria cases;
iii) 25% population of the PHC is tribal; and
iv) The area has been reporting deaths due to malaria and also has the flexibility to direct resources to any needy areas in case of out break of malaria.

Objectives of EMCP

1. Effective control of malaria to bring reduction in malaria morbidity;
2. Prevention of death due to malaria;
3. Consolidation of the gain achieved so far.

Strategies

1. Early case detection and prompt treatment;
2. Vector control by indoor residual insecticide spray in rural ares with API of 2 per 100 and above in the preceding three years with appropriate insecticide and by recurrent anti-malaria in urban areas;
3. Health Education and community participation.

Components of EMCP

1. Early case detection and prompt treatment
2. Selective Vector Control
3. Legislative Measures
4. Personal Protective Measures
5. Epidemic Planning and Rapid Response and Intersectoral Coordination
6. Institutional and Management capacities strengthening
7. Operation Research
8. Community Participation

Anti-malaria Drug Policy

The National Anti-malaria Drug Policy was drafted in 1982 to combat the increasing level of resistance to chloroquine detected in Pf. However, there were large scale malaria epidemics reported in recent times that has generated great concerns. An expert committee was formulated under the chairmanship of DGHS to revise the drug treatment policy and the committee submitted its recommendations:

Insecticide Policy

DDT should be the insecticide of choice for residual spray. If resistance found to DDT then Malathion is the alternative choice. In case of resistance to both DDT and malathion then synthetic Pyrethroids is the choice.

Remote Sensing in Vector Borne Disease Control

Remote Sensing (RS) technology is a tool for the surveillance of habitat, densities of vector species and even prediction of the incidence of disease that must be considered as new invention in the epidemiology of malaria and vector-borne diseases. Literal meaning of remote sensing is to sense any object from a distance. The Human eyes and cameras also act as a remote sensing devices. However, scientist of NASA of USA used colour infrared aerial photography to identify the habitats of a nuisance mosquito, Aedes sollicitans in 1971. Th principle of RS rests on the fact that every object absorbs some part of radiation received from sunlight. Depending upon its physical and chemical properties, the object absorbs some part of radiation while the remaining part is reflected in specific wavelength of the electromagnetic spectrum (EMS). This reflected energy is channelized through a telescope to detectors/sensors present on board of the satellites. The sensors are sensitive to different bands of EMS. The sensors convert the light energy into electrical voltages produces two-dimensional discrete pictures. These are different for different objects and the satellite pass over a particular part of earth at the fixed time intervals repeatedly making it possible to monitor changes in the lad use categories viz. Water bodies, vegetation, forests, soil mapping, geology, crop estimation, detection of fire in forest, mines, oil sleek in sea, etc. Such data is generated in National Remote Sensing Agency, Hyderabad, In India. A feasibility study using Satellite data in collaboration with the Indian Space Research Organization in and around Delhi was carried out and correlation of changes in the areas of land use features viz. Water bodies and vegetations with mosquito density was found significant in some sites.