

Preface

The return of malaria in the seventies on a nationwide scale forced endemic countries to switch back from malaria eradication strategy to that of malaria control with a major aim to reduce morbidity and mortality due to malaria. In India, the National Malaria Eradication Programme (NMEP) launched a revised malaria control strategy known as the Modified Plan of Operation (MPO) in 1977. Resources under the MPO were inadequate and the infrastructure was insufficient to respond to the challenges in malaria control. The scientific community felt that a massive undertaking such as NMEP could not accomplish the goals of malaria control without a strong research support. In response to the challenge of re-emergence of malaria, the Indian Council of Medical Research (ICMR) reviewed the malaria situation and identified priority areas of research. Time bound research projects in specific fields of malaria were funded from the extra-mural grant of ICMR. Simultaneously in 1977, ICMR established the Malaria Research Centre (MRC) in Delhi to conduct basic and applied research, undertake field research in malariology and help to develop trained man power in the country.

The research activities at MRC were directed towards developing new and innovative practical methods of malaria control. The primary task was to find short-term as well as long-term solutions to the problem of malaria through basic, applied and operational field research. Therefore, the Centre focused its research activities on vector biology and control, genetics, cellular and molecular biology, parasitology, biochemistry, pharmacology and epidemiology. A major programme on operational field research was also taken up by MRC under the Science and Technology Project on the Integrated Control of Malaria, Filariasis and other Vector-borne Diseases. This project referred to as Integrated Disease Vector Control (IDVC) was launched in 1985 and its activities are spread over in many eco-epidemiological zones of the country. The IDVC project evaluated noninsecticidal methods for disease vector control, such as environmental modification and manipulation coupled with biological control of aquatic stages of vectors. In this approach, intersectoral collaboration, community involvement and cooperation were the key factors. The feasibility of this alternative strategy of malaria control was evaluated at 12 field sites as shown in the map—Nadiad (Gujarat), Sonapur (Assam), Haldwani and Hardwar (Uttaranchal), Shahjahanpur and Shankargarh (U.P.), Chennai (T.N.), Jabalpur (M.P.), Rourkela (Orissa), Panjim (Goa), Car Nicobar (Andaman & Nicobar Islands) and Bangalore (Karnataka). A field station in Delhi was also opened to control mosquito nuisance and malaria and to coordinate the activities of the field stations.

Major areas of research undertaken by MRC include mosquito fauna surveys, development of simple identification keys for adults and larvae, development of genetic maps using phenotypic and biochemical markers for important malaria vectors, cytotaxonomic studies for the identification of species complexes, laboratory and field studies to examine the biological variations among sibling species, development of molecular identification techniques for sibling species, monitoring of insecticide resistance through space

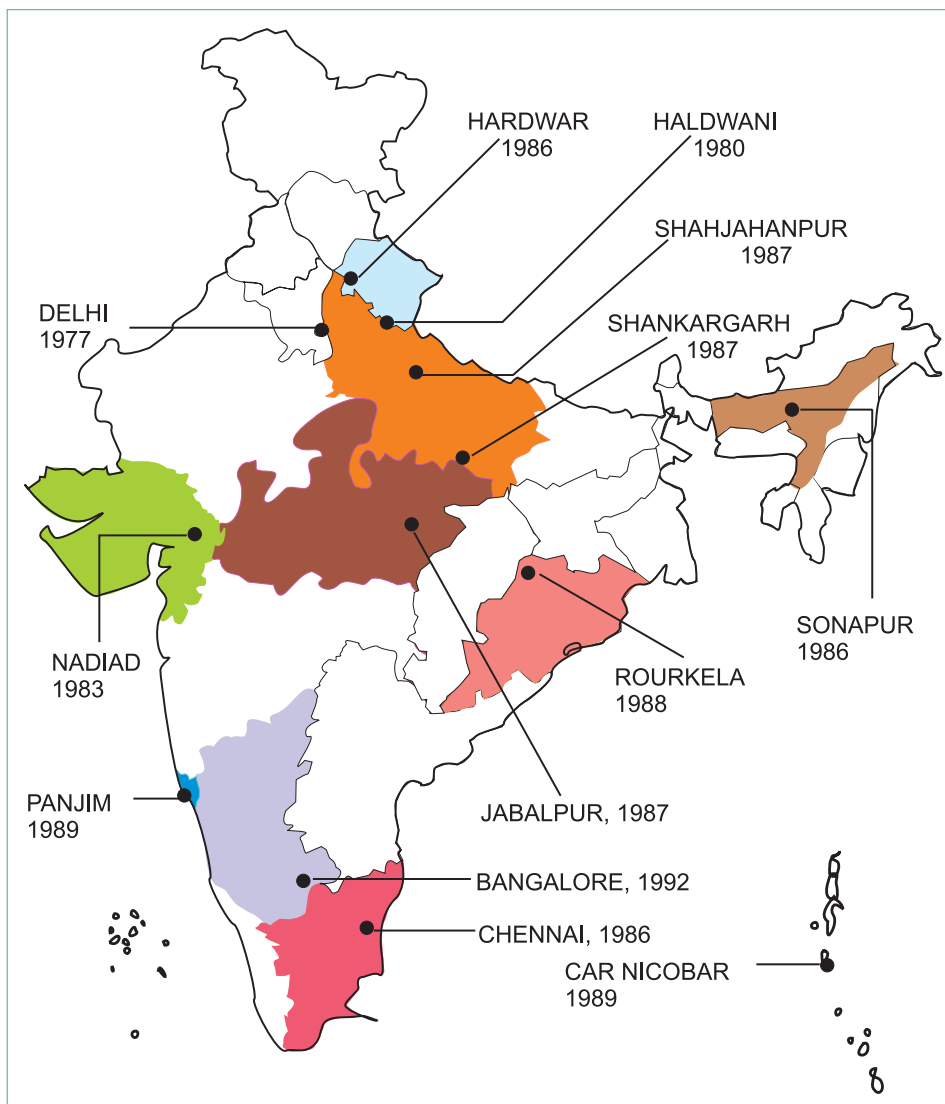


Fig. 1: **Location and year of establishment of MRC Headquarter at Delhi and its field stations**

and time, evaluation of new insecticides and biological control agents for vector control and reduction in malaria, evaluation of herbal products as mosquito repellents and larvicides, GIS and RS as tools to map the distribution and breeding site delineation of malaria vectors, etc. Malaria parasite bank has provided a rich resource of malaria parasites for various studies. These studies include molecular and biochemical characterization of parasites, drug resistance mechanisms, evaluation of new molecules/compounds for their antimalarial activity, parasite invasion and adherence mechanisms, etc. Epidemic investigations, clinical drug trials, monitoring of drug resistance, health impact assessment studies at developmental projects, preparation of action plans, etc. have yielded valuable information. Field evaluation of new insecticides, biolarvicides, insecticide impregnated bed nets, drugs

and parasite diagnostic kits have provided new armamentarium to malaria control and many of which have found place in national malaria control programme. Malaria clinics at the headquarter and field stations provided excellent diagnosis and treatment facilities to patients which made them very popular and many drug trials could be conducted very easily. Malaria clinics are also providing biological material for research.

At the field stations feasibility and economic viability of bioenvironmental interventions was demonstrated in the control of industrial malaria at BHEL complex, Hardwar and IDPL, Rishikesh; rural malaria in Kheda, Shahjahanpur, Haldwani and Shankargarh; urban malaria in Chennai, Goa and Ahmedabad; and coastal malaria in Car Nicobar Islands. In areas not

amenable to bioenvironmental interventions, such as in Sonapur (Assam), Rourkela (Orissa) and Mandla (Madhya Pradesh) insecticide treated bednets were highly successful. The network of field laboratories in endemic areas is serving as testing ground for new technologies and helping in the transfer of technology through field demonstrations.

Another important mandate for MRC is man power development and transfer of technology to the end users. This was achieved very effectively by organizing training courses, workshops and meetings with health personnel and community. Audio-visual programmes/documentaries developed by the Centre are extensively used in training courses and to create community awareness. These are also being used by the State Health Officers in their training programmes. Several candidates have pursued post-graduate and doctoral research at MRC that led to award of degrees by national and international universities and institutions of higher learning.

Scientists of MRC have participated in collaborative research and multinational training courses with several international organizations, undertaken consultancy assignments with WHO and other organizations, served as members of steering and expert committees and task forces, and have been invited to deliberate upon issues of topical interest in several scientific forums.

At the national level, scientists of MRC have participated in planning of malaria control, in the in-depth reviews of the MPO/NMEP, reviewed the research projects in the background of current priorities, provided support for the expansion of malaria research in sister institutions by providing biological material and technical expertise. MRC has undertaken research and training activities in consonance with the Global Malaria Control strategy and is an active partner in the Roll Back Malaria programme. The Centre had a number of fruitful collaborations with the R&D industry in evaluating the new drugs, insecticides and other tools and looks forward to more of these partnerships in future.

The studies carried out at MRC are interdisciplinary, cutting across classical entomology, parasitology, epidemiology, genetics, immunology, biochemistry and molecular biology with the state-of-the-art tools and analytical procedures. Field operational researches are carried out following the national and international guidelines. Over the years MRC has carried out novel researches and the outcome of these researches found place in the planning and implementation of malaria control activities. I am happy to mention that MRC is now in a position to meet the challenges in the 21st Century.

Sarala K. Subbarao
Director