

Vinod Prakash Sharma

Vinod Prakash Sharma is the Founder Director of the National Institute of Malaria Research (NIMR), New Delhi. He is presently the Chairman of the Vector Science Forum of the Indian Council of Medical Research (ICMR). His research interests have been malaria epidemiology and control, vector biology and control of vector-borne diseases. Most of his work on malaria control has not involved the use of chemicals. Sharma tells *Current Science* that NIMR is the first institute in the world with a parasite bank catering to the research needs of the entire country. Sharma, jointly with the Central Drug Research Institute (CDRI), Lucknow, has carried out drug trials and successfully developed a new drug alpha, beta arteether derived from the Chinese herbal plant, *Artemisia annua*. This is exported to about 38 countries.

The problem of malaria in India...

Nearly 95% of the population of India is at a risk of malaria, which means they can contract the disease; it does not mean that there is an ongoing transmission. The areas seriously affected by malaria are Odisha, the North Eastern states, Madhya Pradesh, Chhattisgarh, nearly 26–30% of the urban areas and almost the entire tribal area of the country. The problem is quite serious and it takes up nearly 35–40% of the health budget of the Government of India, about 50% of the health budget of the State Governments and foreign assistance. A lot of money is used in its control and the cases reported are close to 1.67 or 2 million; reported deaths are 1000, but this is grossly underestimated; the incidence is much higher than is projected by the National Vector Borne Disease Control Programme (earlier known as NMEP or the National Malaria Eradication Programme).

Research on malaria in India compared to that in other countries...

Research started late in African countries, say about 10–15 years ago. If we see the

publications and contributions being made by African countries, they are at the top level. As far as research in India is concerned, we are making important contributions but most of the research on malaria vaccines is being done in UK, USA and Australia. In India, the International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, carries out research on malaria vaccines. Other than that nothing substantial is being done. Basic research is being done at the Indian Institute of Science, ICGEB, and some laboratories of ICMR. Funding for research in malaria mostly comes from the Government. The global fund money is allocated for applied research and is directed towards understanding the epidemiology of malaria and its control.

The problem of drug resistance and alternatives...

All drugs and insecticides have a short window of life. If you use them extensively, then the parasite and the mosquito develop resistance and these chemicals are no longer effective. One has to look for new molecules. Towards artemesinin the resistance has started developing; recently resistant strains have been found in Cambodia and Thailand borders, but India is still safe. Work is going on to look for some alternative insecticides that can be used for treatment.

Well, there are many alternative ways, for instance, biological control. Whenever one is unable to control larvae using chemicals, release fishes that eat mosquito larvae and this supplements the control efforts. For malaria control, one has to integrate various methods; you have to look at the situation and see what permits us to use which method and combine the methods in such a way that together they become more effective. This sounds simple but is a complicated story when applied in any endemic area, because you have to survey the entire area and know the people, transmission array, flu vectors, where vectors are

breeding, what is the best method to control them, whether to use the insecticides or not, how frequently they should be used, and so on.

The sequencing of genomes of Plasmodium vivax, P. falciparum and Anopheles gambiae...

This has not aided malaria research so far. But theoretical projections are that it will help develop new drugs and new targets for *P. vivax*. It may take a long time. Sequencing has become routine and I am opposing it at NIMR, as it is expensive and time-consuming.

Change in the way research on malaria is pursued...

The way research is done has substantially changed and I am not happy about this. Earlier when we were young we used to do research that was programme-oriented and problem-oriented. We carried out research on malaria because we wanted to control malaria. The present generation does only basic research in malaria because molecular biology has taken deep roots. Research is changing towards molecular approaches with limited applied value. Research in molecular biology has its own benefits; citations are high, papers are published in high-impact journals and one is rated as a good scientist if work is published in those high-impact journals. Also, the present generation of students is not willing to carry out field work; they use sophisticated techniques such as remote sensing and GIS because they get good pictures and journals publish such work. But they are not willing to go to the field to verify whether remote sensing gives a correct picture in the field.

Richa Malhotra
e-mail: rchmalhotra@gmail.com