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# Innovation in Malaria Control

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LEPRA Society:  
Health in Action

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January 2011

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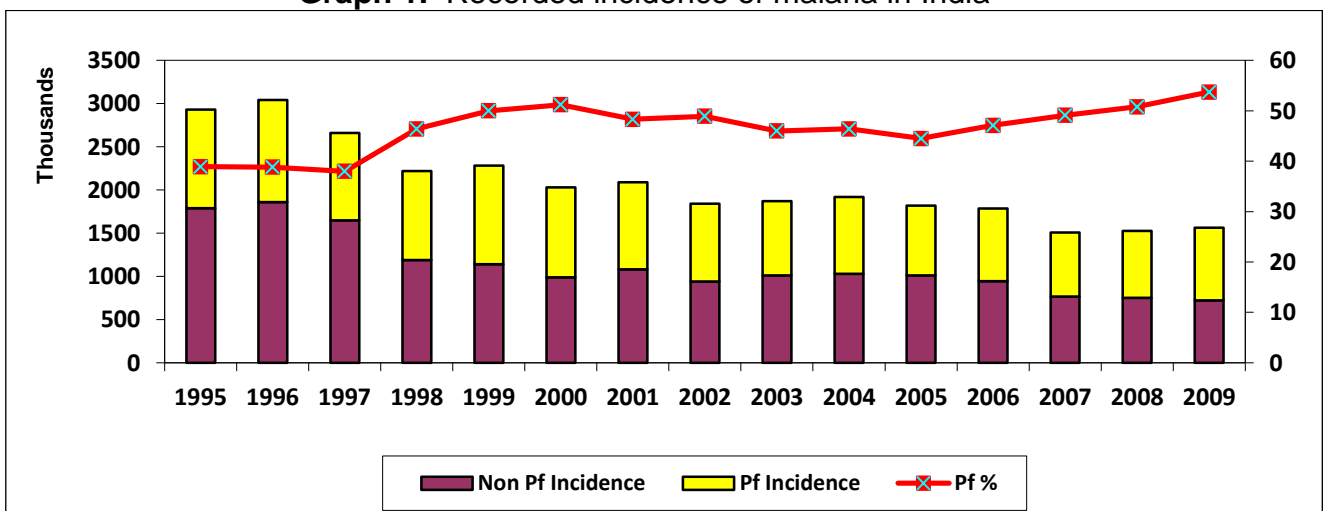
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## A problem for the long term

Malaria in India is a serious and continuing problem. The Government of India (GoI) first took a systematic approach to trying to eliminate the disease with the launch of the National Malaria Control Programme in 1953, using the DDT indoor residual spray (IRS). Since then, the malaria control programme, going through many changes of name, has seen malarial incidence reach peaks and troughs. In 1965 it seemed that the disease might be eliminated altogether, with incidence reduced to a mere 100,000 cases per annum (from 75 million before 1953). However, drug resistance in parasites and insecticide resistance in mosquito vectors led incidence to rise again, and since 1977 the programme has aimed mainly to contain the spread of malaria, and to reduce the number of people who die from it.

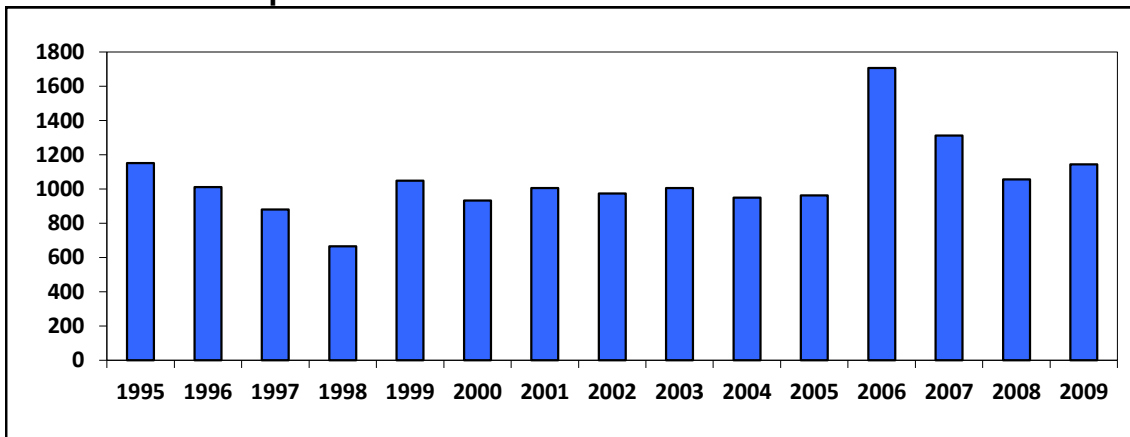
The malaria situation in India in recent years has shown some improvement, but also some worrying signs of persistent problems. Between 1995 and 2009, the total number of reported malaria cases in India declined from 2.93 million to 1.56 million: a reduction of nearly half. However, the number of reported cases caused by the parasite *Plasmodium falciparum* (Pf), which causes the most serious form of the disease, declined by much less: from 1.14 million to 840,000. Thus, Pf moved from causing 38.84% of cases to 54%. At the same time, the number of reported deaths from malaria did not decline at all, from 1,151 in 1995 to 1,144 in 2009. Thus, while the incidence of malaria has declined, its most dangerous form has not done so to anything like the same extent, and it is still causing the same level of mortality. See **graphs 1 and 2**. Moreover, it is generally agreed that these numbers of reported cases are considerably below the actual number of malaria cases in the country. The World Health Organization in 2006 estimated that there were 10.6 million cases of malaria in India, with 15,000 deaths. This represents a public health problem of the first order.<sup>1</sup>

**Graph 1. Recorded incidence of malaria in India**



<sup>1</sup> Directorate of National Vector-Borne Disease Control Programme, *Strategic Action Plan for Malaria Control in India 2007 – 2012*, pp.6-7, 10; *Orissa and the MDGs, Millennium Development Goal 6: Combat HIV/AIDS, Malaria and Other Diseases*, p.3

**Graph 2. Recorded deaths due to malaria in India**



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Malaria is still a major cause of poverty in some areas, a factor that is especially marked because it disproportionately affects tribal communities, already among the most deprived in India. Moreover, new technologies provide opportunities to improve malaria control. The National Vector-Borne Disease Control Programme (NVBDCP), as it is now called, is approaching the problem in four strategic areas:

1. Detecting and diagnosing cases early and treating them quickly, to reduce the number of people who die from malaria.
2. Controlling the mosquito vectors. There are a variety of methods for this depending on local circumstances, including IRSs, insecticide-treated nets (ITNs) and long-lasting insecticidal nets (LLINs), and measures against larvae.
3. Preparedness for epidemics.
4. Supportive interventions, including building the capacity of health workers and delivering behaviour change communication (BCC) among society.

Effective malaria control in India, however, faces a series of challenges. The first is a “deficiency of human resources at all levels from national to block level”. In 2007, in the 15 states with the highest prevalence rates for malaria, 13% of Medical Officer posts were vacant and 23% of posts for male multi-purpose workers, who are responsible for active case detection in rural areas through the collection of blood smears. More specifically, there are many vacant posts for District Vector-Borne Disease Control Officer, especially in Orissa, Chattisgarh and Jharkand, the three states which between them have 46% of the reported cases of malaria in India.

Moreover, alongside simple numerical increases, the qualitative capacity of health services needs considerable development, both for diagnosis and treatment of malaria. There is a need to extend the rapid diagnostic test (RDT), the method of choice for diagnosis of malaria in remote areas, and this requires appropriate training of health workers in its use. Microscopy facilities, necessary for the diagnosis of *Plasmodium vivax* (Pv) malaria, also need to be strengthened. Accredited Social Health Activists (ASHAs), the primary tool for

delivering malaria control in rural areas, need to be properly trained not only in RDT for diagnosis – and in the identification of severe cases of malaria, which require urgent treatment – but also in the administration of artemisinin combination therapy (ACT) for treatment. Private treatment providers need to be motivated for correct use of anti-malarial drugs. Finally, referral centres for the identification and treatment of severe malaria cases need to be developed and their capacity improved, particularly in the training of staff.

There are also problems of resistance, both to the drugs used to treat the disease and the insecticides used for vector-control. *Pf* is widely resistance to chloroquine – the primary drug used to treat malaria. An ongoing study showed, in 2007, that in 39.1% of *Pf* cases chloroquine was not effective. Even sulfadoxine-pyrimethamine, an element in ACT, the alternative treatment, showed over 10% resistance in some districts of Arunachal Pradesh, Assam, Meghalaya and West Bengal. Resistance to DDT and malathion, two of the primary IDSs, is also widespread.

As part of these efforts, there is a need for large-scale outreach and BCC to at-risk communities. This includes explaining the importance of bed-nets, and generating demand for them so that the programme can move from free distribution to social marketing. Communities also need to be taught how to use nets properly. In areas where IRSs are the preferred method of vector-control, there is resistance among communities because of the white marks left by the sprays on walls, and the acrid smell of malathion. Finally, for severe malaria, communities need to be sensitised that cases can be fatal, and must be referred quickly for treatment.

In the face of these challenges, NVBDCP has restricted its objective, both in the short and medium term, to reducing the incidence of malaria. Elimination of the disease is envisaged only in the long term.<sup>3</sup>

## LEPRA and Malaria – Concentrated in Orissa

LEPRA Society, founded as the British Empire Leprosy Relief Association (BELRA), started work in India in 1924. After independence the Indian Council of BELRA continued work as Hindu Kusht Nivaran Sangh in India. In 1989 LEPRA returned to India and formed LEPRA India, registered in Andhra Pradesh (AP) with its office in Secunderabad. Its work was initially focused on supporting the National Leprosy Elimination Programme, mainly in poorly-served or remote areas of AP and Orissa, and especially with tribal communities. As these are also where the highest burden of malaria is focused, it was natural that LEPRA should extend the scope of its projects to include this as well.

LEPRA's activities to control malaria are primarily concentrated in Orissa, the highest-prevalence state in the country. In 2009, a startling 24% of the total reported cases in India (375,000) occurred in Orissa, with 198 deaths (again 24% of the reported national total). In 2009 Orissa also had 336,047 *Pf* cases, or 40% of the total *Pf* cases reported in the country (and 88% of the total cases in Orissa), and *Pf* is resistant to chloroquine in

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<sup>3</sup> *Strategic Action Plan*, pp.12-13, 16-18, 21-22, 26-28, 31-35, 38-39

many areas. 220 of the 314 blocks in the state are high-burden for malaria, and 20 of the 30 districts. The state annual parasite infection rate (API) is 9.1, compared to a national API of 1.6.

LEPRA's malarial interventions, in Orissa and elsewhere, build on its long experience of community outreach and BCC. They are complemented by work to support the NVBDCP in filariasis control, in districts of Orissa, AP and Bihar.

## **Education and Awareness**

LEPRA's work on malaria is centred around engagement with communities. LEPRA's projects in high-prevalence districts of Orissa and AP include malaria among their information, education and communication (IEC) activities. In Kalahandi district, Orissa, in the course of 2009, 7,000 pieces of printed IEC material were distributed at 19 public meetings and 18 film shows about malaria. Projects in Koraput and Baragarh districts of Orissa, and in the slums of Hyderabad, AP, also distribute malaria-related IEC material from their mobile IEC vans. In Sonapur district of Orissa, 40 street plays were conducted for awareness generation during 2009, covering about 80 villages, and a vehicle designed as a Malaria Rath moved through all 959 villages of the district during "malaria month".

LEPRA's most significant malaria-control project has been the Mayurbhanj Integrated Community Health Project (MICHP), which ran 2006-2010, covering all 26 blocks of Mayurbhanj district, Orissa. MICHP's IEC activities on malaria included flash cards, posters, stickers, and radio jingles and two films in the local language, as well as teaching community groups to perform street plays on malaria. Among its activities was the training of communities on information promotion on malaria through QUEST methodology, a participatory IEC/BCC development process that develops community ownership in the promotion of information suited to their own context. This has been identified as a best practice.

## **Malaria Samadhan Sibir**

MICHP also developed LEPRA's unique community initiative, the Malaria Samadhan Sibir (malaria consultation camp (MSS)). This combines three elements: health education using IEC vans; provision of diagnostic and treatment services to those presenting with fever ; and joint meetings of health functionaries and key community members to organise communities for vector control and programme-related problem solving. MSSs are implemented in collaboration with the mainstream health institution of the district, particularly in remote and inaccessible areas. In 2009 51 MSSs were held in Mayurbhanj and 28 in Kalahandi, the latter providing diagnosis and treatment to 2,755 beneficiaries. In 2010, 14 MSSs were organised in Mayurbhanj, with 2,557 fever patients receiving treatment. Panchayat Health Resource Centers (PHRCs) referred 8,955 malaria-suspect fever cases to different health care centers run by the health administration.



The MSS has been adopted by the Government of Orissa under the same name and strategy. The state government has also adopted the flip-chart developed by MICHIP, with acknowledgement to the project. MICHIP is recognised by the Government of Orissa's National Rural Health Mission in its published report "Malaria Best Practices in Mayurbhanj – Identifying local champions".

LEPRA's Mayurbhanj Integrated Community Health Project was recognised by the Government of Orissa for its best practices in malaria control.

## Capacity-building

Integral to this community-engagement work has been the building of capacity, especially at village level. Between 2006 and 2010, in Mayurbhanj district, MICHIP oversaw the formation or strengthening of mechanisms at three levels for information collection: Gaon Kalyan Samities (GKSs) in 1580 villages, Gram Panchayat level Health Resource Centres in 200 Gram Panchayats, and Block Link Resource Centres in all 26 blocks of the district. This has allowed community-based monitoring of malaria activities, community advocacy, and referral of fever cases. This is another best practice identified by Government of Orissa.

LEPRA's projects have also provided training and sensitisation at a variety of levels. In 2009 in Kalahandi district, 6 one-day block-level training programme on malaria prevention and control were conducted for ASHAs and Aangan Wadi Workers. Additionally, 15 training programmes were conducted for residential school teachers, 7 for government high school teachers, and 6 for block resource centre coordinators (BRCCs) and cluster resource centre coordinators (CRCCs). In Sonapur in 2009, 176 BRCCs, CRCCs, and teachers were sensitized and trained on malaria in 6 sensitization programmes. In

Mayurbhanj, alongside health workers, teachers and school students, training was provided to community leaders, NGO and community-based organisation members, ICDS workers, private medical practitioners and traditional healers.

## Vector Control

LEPRA has also worked to support vector control activities, especially through MSSs. In Mayurbhanj, community participation was used to promote the use of bed-nets, IRS, and Gambusia fish (to eat mosquito larvae). In 2010, 24,967 LLINs were distributed and their use monitored, bed-net distribution was promoted in 949 villages, and IRS spraying monitored in 945 villages.



In Adilabad district of AP, in 2009, 185 people were trained in treating bed-nets with insecticides. To support the IRS programme in Sonepur

district, 1,750 GKS members were sensitized on what to do before and after use of IRS and 9 monitoring meetings were facilitated and guided by the LEPRA at the villages targeted for IRS during 2009.

## Evaluation

A project entitled 'India Malaria Impact Evaluation', funded by World Bank, is currently being implemented in Mayurbhanj and will continue until the end of March 2011. The objective of this project is to measure the impact of the proposed pilot innovations in both prevention and treatment services on health and socio-economic indicators of interest, and to investigate whether specific interventions or combinations of interventions are more cost-effective than others in achieving positive outcomes. Evidence generated through impact evaluation will be used on an ongoing basis to provide recommendations to strengthen the programme's effectiveness.

## Future Plans

In the coming years, LEPRA intends to expand the scope of its malarial interventions, driven by community-identified need, in line with the increased efforts by government and donor agencies to combat the problem. Its approach to malaria control will emphasise:

- Social mobilization, especially through the MSS, and empowerment of the grass roots, to foster demand for services and participate in vector control measures;
- Capacity-building of government, NGOs and CBOs, particularly to strengthen the referral system; and
- Delivery of timely preventive and curative services (both diagnosis and treatment) where necessary.

It will seek to combine its malaria interventions with the control of Kala Azar, another vector-borne disease, primarily found in Bihar..

In AP, LEPRA will carry out mapping of high-burden malaria-prone areas, do structural analysis, and implement specific interventions where appropriate.

LEPRA's Blue Peter Public Health & Research Centre will carry out research on:

- Prevalence of *Pf* malaria in tribal and urban areas;
- Anti malaria drug resistance among *Pv* and *Pf* cases; and
- Incidence of malaria among alpha thalasaemia and sickle cell anaemia clients in tribal areas.

It will also carry out operational research on:

- the role of private health care providers and practices in the treatment of malaria in tribal areas and their linkages to NVBDCP; and
- The use of LLINs and their impact on malarial incidence.



## Acronyms

|           |  |
|-----------|--|
| ACT       | Artemisinin combination therapy                    |
| AP        | Andhra Pradesh                                     |
| API       | Annual parasite infection rate                     |
| ASHA      | Accredited Social Health Activist                  |
| BCC       | Behaviour-change communication                     |
| BRCC      | Block Resource Centre Coordinators                 |
| CRCC      | Cluster Resource Centre Coordinators               |
| GKS       | Gaon Kalyan Samitie                                |
| IEC       | Information, education and communication           |
| ICDS      | Integrated Child Development Services              |
| IRS       | Indoor residual spray                              |
| ITN       | Insecticide-treated net                            |
| LLIN      | Long-Lasting Insecticidal Net                      |
| MICHP     | Mayurbhanj Integrated Community Health Project     |
| MSS       | Malaria Samadhan Sibir (malaria consultation camp) |
| NVBDCP    | National Vector-Borne Disease Control Programme    |
| <i>Pf</i> | <i>Plasmodium falciparum</i>                       |
| <i>Pv</i> | <i>Plasmodium Vivax</i>                            |
| RDT       | Rapid diagnostic test                              |