

Ranchi (Jharkhand)

This field unit was opened in 2006 with the following objectives.

- Clinical drug trials
- Malaria disease burden estimation including malaria in pregnancy
- Malaria epidemiology and control

Background

The Jharkhand state is highly endemic for malaria contributing about 7% of total malaria cases in the country. Other vector-borne diseases prevalent in the state are filariasis, kala-azar and dengue. There is very scanty information on the transmission dynamics of various vector-borne diseases and health seeking behaviour of the tribal population is very poor. In order to find solutions to control vector-borne diseases in Jharkhand, a new field unit was opened at Itki, Ranchi. The unit started functioning in April, 2006.

Mandate

1. To study the prevalence of vector species and transmission dynamics of malaria in the state
2. Clinical drug trials.
3. Malaria disease burden estimation including malaria in pregnancy.
4. Malaria epidemiology and control.
5. Filariasis survey in Jharkhand state to prepare a filarial map and formulate the strategy for the control of filariasis.
6. Mapping of insecticide resistance of malaria vector in Jharkhand state.
7. Identification of transmission risk factors of malaria in problematic districts of Jharkhand state.
8. Establishment of larvivorous fish hatcheries of *Gambusia affinis*, *Poecilia reticulata* and local larvivorous fishes in Jharkhand state.
9. To study the prevalence of G-6-PD deficiency

and other genetic disorders in tribal population of Jharkhand.

10. Identification of foci of kala-azar and the reasons for its persistence in Santhal Paragana (Sahebganj, Pakur, Dumka and Godda).
11. To evaluate and develop effective interventions against vector-borne diseases appropriate to needs of the local area.
12. To provide technical support to the NVBDCP, such as in malaria investigations, training, IEC etc.

Activities, Progress and Achievements

Biological control

Larvivorous fish survey

An extensive larvivorous fish fauna survey has so far recorded 16 fish species in the area. Of these, six species have been found to have good larvivorous potential. These are *Danio (Brachydanio) rerio*, *Esomus danricus*, *Punctius sophore*, *Punctius ticto*, *Rasbora danioconious* and *Oreochromis mossambicus*.

Establishment of larvivorous fish hatcheries

Large-scale production of *G. affinis* and *P. reticulata* was undertaken for mosquito control programme. Ten hatcheries for the mass production of *G. affinis* and *P. reticulata* were selected in different PHCs in the first phase. For the first time in Ranchi (Jharkhand), two hatcheries of *G. affinis* were established at Duranda,

Ranchi. One hatchery of *P. reticulata* (Guppy) was established at Itki PHC. The fishes from these stocks are being used for the establishment of other hatcheries in different PHCs of Jharkhand state. Hatchery for mass production of the local fish, *Esomus danricus* (flying barb), was also established at Baratu village, Ranchi.

Mosquito fauna surveys

Mosquito fauna surveys were carried out in Ranchi. Twenty species belonging to four genera namely *Anopheles*, *Aedes*, *Armigeres* and *Culex* were the most prevalent genera. The following anopheline species were collected during the survey: *Anopheles annularis*, *An. aconitus*, *An. culicifacies*, *An. fluviatilis*, *An. nigerrimus*, *An. pallidus*, *An. stephensi*, *An. subpictus*, *An. splendidus*, *An. vagus* and *An. jamesii*.

Bionomics and ecological study of malaria vectors

Studies on the bionomics and ecology of the malaria vectors—*An. culicifacies*, *An. fluviatilis* and *An. annularis* are in progress.

Therapeutic efficacy of chloroquine against uncomplicated falciparum malaria

Chloroquine is the first line antimalarial drug for the treatment of malaria in the state. To evaluate therapeutic efficacy of chloroquine, following two studies have been initiated.

Study 1: Under the therapeutic efficacy of chloroquine against uncomplicated *P. falciparum* malaria, 50 cases were registered in Jaldega PHC of Simdega district

(Jharkhand), out of that early treatment failure was seen in four cases and late treatment failure in 13 cases. Remainder cases were found to be sensitive up to 28 days of follow-up.

Study 2: Another study was conducted in PHC Ungarha, Ranchi district where 61 uncomplicated cases of *P. falciparum* malaria were registered. Out of these, early treatment failure was seen in 3 cases and late treatment failure in 14 cases, while the remainder cases were sensitive to chloroquine up to 28 days of follow-up.

Filariasis survey in Jharkhand state

Filariasis survey was carried out in the primitive tribe of Santhal in Dumka district of Jharkhand state. The microfilariae rate in Asanrol, Korian, Haripur, Saraiya Hat, Karinda, Kurwa and Dalahi was 15.4, 8.4, 8.3, 11.5, 18.9, 6.3 and 12.3% respectively. The microfilariae rate of 18.9% was highest in Karinda village of Ramgarh PHC of Dumka district. The youngest microfilariae carrier was a 4-year girl and the oldest was a 65 years male from Saraiya Hat village.

Another filariasis survey was also carried out in Primitive tribe Oraon of Ranikhatinga village of PHC Itki of Ranchi district. The microfilariae rate in Nepada, Bara kochcha, Mahaveer Chowk and Julahatoli was 10.4, 14.6, 15.4, 10% respectively. The overall microfilariae rate in Ranikhatinga area was 12.8%. At both the places, the microfilariae was identified as *W. bancrofti*. *Cx. quinquefasciatus* was incriminated as the vector for the transmission of filariasis in both the areas. The data of mf positive cases were sent to the state programme officer of NVBDCP for the treatment of the cases. The present survey in the two districts highlights the problem of filariasis in Jharkhand state.

