1.3 Report on outbreak of fever/malaria cases in Bap village, Jodhpur District, Rajasthan

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**OBJECTIVES**

1. To undertake investigation of reported malaria outbreak in study area and establish causes of enhanced transmission leading to outbreak.
2. Demonstrate intervention at public health level to achieve control over ongoing outbreak.
3. Recommendations to state health department as guideline for future outbreaks.

**PROGRESS**

An outbreak of fever cases with suspected illness caused by malaria/viral pathogens was reported in the News Papers in Jodhpur from 20.9.11 till 22.9.2011. The Joint Director, Jodhpur Zone, Department of Health & Family Welfare, Govt. of Rajasthan was contacted and offered expertise to investigate the situation to establish the cause of outbreak occurrence.

**Situation analysis:** Affected area Bap is situated in the north-west of Jodhpur district, Rajasthan (Fig. 1). A retrospective analysis of the malaria cases as reported in last three years in the records of the Primary Health Centre, Bap, Jodhpur District, Rajasthan was analyzed. It was observed that almost same numbers of malaria, as reported during current period, have been reported during last three years also. Epidemiologically, the same situation of malaria magnitude is persisting in the Bap area.

**Investigations into affected villages - House Surveys:** Team of scientists of DMRC, Jodhpur visited two villages Kanasar and Rawra from where malaria cases were reported to Bap PHC in abundance. The joint investigation team of DMRC scientists and staff of the state health department posted in Bap PHC visited the houses of patients. In the affected houses, the investigations were made with respect to blood report and treatment given to the patients of malaria by the treating physicians. Entomological investigations were made on the type of adult and larval mosquito species present in the houses, their densities, status of insecticide spray and breeding sites of mosquitoes.
Investigations into affected villages -Village Pond Surveys: To ascertain the breeding habitats of anopheline mosquitoes in the malaria affected villages, the inter-stone spaces on the banks of village ponds were investigated for the presence of larvae. It was also studied how the water from the village pond were drawn and transferred to household water storage tanks.

OBSERVATIONS

1. Based on the reports of the blood slides taken by the hospital, the present outbreak was observed to be caused by malaria. Since almost similar numbers of cases were reported to BAP PHC every year during last three years, the present outbreak was not involving sudden and unexpected number of malaria cases.

2. Two anopheline species viz., An. stephensi and An. subpictus were observed during the course of investigation. The density of An. Stephensi was 24 PMH while that of An. subpictus was 40 PMH.

3. DDT spray was observed in the malaria affected houses but in spite of DDT spray, live adult anopheline mosquitoes were present.

4. No indoor breeding of mosquitoes was observed in the affected villages.

5. The mosquito breeding was observed in the gaps of inter-stone spaces forming banks of pond where water current inflows and outflows along with waves.
6. The village inhabitants appeared to import mosquito larvae from the village ponds to their household storage tanks of water.

7. In all 13 villages in and around Bap village, contributed to the current magnitude of malaria. It was observed that the cases reported in Bap PHC were treated by the available physicians.

**Interventions by the DMRC scientists for controlling the malaria situation:** Public health interventions to control malaria cases in Bap and adjoining villages were discussed by the DMRC scientists with the state health authorities. Following control strategy of malaria was suggested:

1. It was reported by the state health officers deputed in Bap village that all 13 affected villages were contributing malaria cases. DMRC suggested that we should simultaneously impose the parasite containment in cases through their door to door supply of anti-malarial drugs in all 13 villages and that case treatment should be coupled with vector control (adult & larval) to check further transmission.

2. For pinpointing the active breeding sites in the village/houses, the state health staffs were trained by DMRC scientists.

3. The field staff of state health department were accompanied by DMRC scientists to the affected villages and an on the spot demonstration of anti-larval applications was given.