

COMMUNICABLE DISEASES

1.11 Translational Research for development and testing of ICMR-DMRC module of Dengue control for Rajasthan

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Duration: Two years & nine months **Status:** Completed

Funding Agency: ICMR Translational Research, (Extramural)

OBJECTIVES

1. Development of a ICMR-DMRC Dengue Control Plan for 7 zones of department of health & family welfare of Rajasthan.
2. Demonstration of Dengue control/prevention in collaboration with the state health authorities using the larvicide used in programme.
3. Demonstration and monitoring of disease control/elimination for two consecutive years and handing over the documental manual of dengue control plan for Rajasthan.

PROGRESS

The surveillance of breeding of larval *Aedes* has been undertaken in 14 district headquarters towns and 6 rural areas. The areas namely Jalore, Pali, Sirohi, Barmer, Jaisalmer, Jodhpur, Jaipur, Alwar, Dausa, Sikar, Jhunjhunu, Bikaner, Churu and Ganganagar were surveyed taking representative samples from all the municipal wards of these towns. Rural areas worked out are Bhinmal, Sojat city, Shivganj, Balotra, Pokaran and Balesar. Work is going on in two districts of Ganganagar and Nagaur. In all, 10,568 houses were searched which included 193 households in Jalore, 302 in Pali, 492 in Sirohi, 335 in Barmer, 307 houses in Jaisalmer, 1886 in Jodhpur, 1566 in Jaipur, 403 in Alwar, 306 in Dausa, 591 in Sikar, 429 in Jhunjhunu, 996 in Bikaner, 246 in Churu, 555 in Ganganagar, 307 in Bhinmal, 325 in Sojat city, 410 in Shivganj, 417 in Balotra, 294 in Pokaran and 208 in Balesar for dengue vector breeding. Maximum breeding was observed in Sojat city (32.3%). In Jalore town, 193 houses studied included 1301 containers examined for *Aedes* breeding, of which 51 were positive for vector breeding. Out of these 51 containers, only 11 (0.8%) were positive for dengue virus. In Pali town, of 2355 containers examined, 3.4% were positive for breeding and of these only 1.0% showed virus activity. In all, 61,423 containers in 10,568 houses of 20 study have been searched out of which only 1153 (1.87%) containers were virus positive.

A comprehensive survey in the urban areas (district headquarters) of all the 34 districts of Rajasthan was accomplished till December, 2013.

During the course of investigations we have examined 1,30,525 domestic containers in 33 districts of Rajasthan. Out of containers examined only 2288 (1.75 %) of containers were positive for breeding of dengue vectors. At individual district level also the maximum breeding observed in Jaipur district was only 6.1% of containers examined. If we observe the percentage of total containers examined which were positive for presence of dengue virus it was clear that only 1.0 % of 1,30, 525 containers examined showed virus presence. At individual district level, maximum virus positive containers (3.8%) was observed in Jaipur (Table 1).

Table 1. District wise Distribution of breeding in containers

S.No.	Name of district	Number of containers examined	Number of containers positive for breeding	Percentage of containers positive for breeding	Number of containers positive for virus	Percentage of breeding positive containers positive for virus	Percentage of examined containers positive for virus
	Jalore	1297	56	4.31	17	30.35	1.31
	Pali	2338	78	3.33	33	42.30	1.41
	Sirohi	3015	75	2.48	44	58.66	1.49
	Barmer	1518	56	3.68	18	32.14	1.18
	Jaisalmer	1364	40	2.93	11	27.50	0.80
	Jodhpur	10, 666	521	4.88	341	65.45	3.19
	Jaipur	7855	485	6.17	301	62.06	3.83
	Alwar	2044	53	2.59	43	81.13	2.10
	Dausa	1931	31	1.60	27	87.09	1.39
	Sikar	3478	111	3.19	79	71.17	2.27
	Jhunjhunu	2845	105	3.69	68	64.76	2.39
	Bikaner	5999	107	1.78	61	57.00	1.01
	Churu	1417	7	0.49	7	100.00	0.49
	Ganganagar	3180	72	2.26	56	77.77	1.76
	Hanumangarh	1677	22	1.31	4	18.18	0.23
	Nagaur	7234	73	1.00	46	63.01	0.63
	Ajmer	4523	33	0.72	26	78.78	0.57
	Bhilwara	7200	36	0.50	22	61.11	0.30
	Tonk	4470	21	0.46	19	90.47	0.42
	Udaipur	2692	NF	-	NF	-	-
	Banswara	3558	10	0.28	8	80.00	0.22
	Chittorgarh	6584	38	0.57	26	68.42	0.39
	Pratapgarh	3089	22	0.71	17	77.27	0.55
	Dungarpur	3320	16	0.48	5	31.25	0.15
	Rajsamand	4746	32	0.67	13	40.62	0.27
	Kota	7210	41	0.56	38	92.68	0.52
	Baran	3062	46	1.50	30	65.21	0.97
	Bundi	4489	46	1.02	24	52.17	0.53
	Jhalawar	2436	5	0.20	5	100.00	0.20
	Bharatpur	6777	30	0.44	24	80.00	0.35
	Dholpur	2133	NF	-	NF	-	-
	Karauli	2385	7	0.29	7	100.00	0.29
	Sawai Madhopur	3993	13	0.32	12	92.30	0.30
		1, 30, 525	2288	1.75	1432	62.58	1.09

Based on our earlier findings that dengue viruses undergo transovarial or vertical transmission across generations of mosquito vectors, a translational research has been undertaken to study whether

maintenance of dengue viruses through vertical route could be taken as the point of intervention to break the extrinsic – intrinsic cycle of virus to achieve the check over active transmission of the disease. A study has been accomplished in 32 district headquarters of Rajasthan to develop and test model of intervention to interrupt dengue transmission. The early warning system developed based on the observations of presence of dengue virus in laboratory reared adult mosquitoes was found technically feasible and very useful in predicting possible onset of dengue in the areas. The translation of research generated observations into public health actions was attempted through existing set up of state health department. Wherever, translation of early warning was complied with corresponding anti larval actions, disease prevention/control was effectively observed.