

**GOVERNMENT OF INDIA  
MINISTRY OF HEALTH AND FAMILY WELFARE  
DEPARTMENT OF HEALTH AND FAMILY WELFARE**

**LOK SABHA  
UNSTARRED QUESTION NO.964  
TO BE ANSWERED ON 22<sup>ND</sup> NOVEMBER, 2019**

**JAN JAGRUKTA ABHIYAAN**

**964. SHRI REBATI TRIPURA:  
SHRI SELVAM G.:  
SHRIMATI SANDHYA RAY:  
SHRI VIJAY KUMAR DUBEY:**

Will the Minister of **HEALTH AND FAMILY WELFARE** be pleased to state:

(a) whether the Government has launched a special campaign called Jan Jagrukta Abhiyaan recently aimed towards sensitizing and mobilizing community for prevention and control of vector borne diseases such as Dengue and Malaria and if so, the details thereof and the achievement made so far in this regard;

(b) whether some parts of the country have reported highest number of dengue cases during the last three months;

(c) if so, the number of such cases reported including the number of persons treated and deaths therefrom, State/UTwise;

(d) whether it is a fact that in some countries research has been done to produce anti-dengue and sterile mosquitoes to control malaria and dengue and if so, the details thereof; and

(e) whether any research in this direction has been initiated in the country and if so, the details thereof along with funds allocated and results achieved so far in this regard?

**ANSWER**

**THE MINISTER OF STATE IN THE MINISTRY OF HEALTH AND  
FAMILY WELFARE  
(SHRI ASHWINI KUMAR CHOUBEY)**

(a): Yes. A Mega awareness campaign ('People's Movement') on Dengue and Malaria in Delhi from 17-19 July 2019 was conducted under the leadership of Hon'ble Union Minister of Health & Family Welfare involving People's representatives and 286 teams comprising Senior officers and staff from Health Ministry, all three Delhi Municipal Corporations and New Delhi Municipal Council. During the campaign, following activities were carried out:

- i. Interaction with Resident Welfare Associations, school children, social and religious leaders to create awareness to prevent mosquito breeding in order to control Dengue, Chikungunya and Malaria
- ii. Demonstration of various types of containers/ sites/rooftops supporting mosquito-breeding and their elimination.
- iii. Distribution of leaflets, handbills, pamphlets

iv. Motivating the community and schools to sustain preventive actions and to adopt personal protection measures to avoid mosquito bite

The follow up campaign was carried out in Delhi during August and September, 2019.

(b) & (c): Yes. As per reports submitted by the States/UTs, high number of Dengue cases occurred during last three months (August to October 2019). The State/UTs-wise number of cases and deaths due to Dengue in the country during last three months are at **Annexure**.

(d) **Dengue**

**1. Wolbachia-based control of Aedes borne infections**

**(i) World Mosquito Program by Monash University, Australia (Population replacement)**

For Aedes-borne infections, including dengue, Professor Scott O'Neil and his team from Monash University, Melbourne, Australia developed Wolbachia-based strategy for the control of Aedes aegypti transmitted dengue/ chikungunya/zika viruses. Ae. aegypti does not harbor Wolbachia in nature. To develop Wolbachia infected Ae. aegypti strain, Wolbachia isolated from Drosophila melanogaster was introduced stably into this mosquito species. The transinfected Ae. aegypti mosquitoes in addition to exhibiting cytoplasmic incompatibility (producing sterile eggs) in crosses with wild Ae. aegypti females and maternal transmission of Wolbachia to the progeny in crosses with wild Ae. aegypti males, exhibits interruption of dengue, chikungunya, zika, yellow fever viruses replication.

World Mosquito Program initiated by Prof. Scott O'Neil (earlier called as Eliminate Dengue Program), is operating in 12 countries and six countries (Australia, Brazil, Mexico, Vietnam, Indonesia and Colombia) are doing field trials as well.

**(ii) Wolbachia-based strategy for the control/ suppression of Aedes albopictus in China**

Prof. Zhiyong Xi from Michigan State University, East Lansing USA developed Aedes albopictus strain infected with different strain of Wolbachia, as Ae. albopictus is naturally infected with Wolbachia. Sun Yat-sen University in Guangzhou, China, and MSU Joint Center of Vector Control for Tropical Disease established in China under the leadership of Prof. Xi released male mosquitoes of this strain to suppress Ae. albopictus wild population.

**2. Genetically modified techniques: OXITEC Ae. aegypti RIDL Strain:**

- OX513A is an Ae. aegypti strain developed based on RIDL (radiation induced dominant lethal) technology, in which all individuals carry a repressible, homozygous, dominantly inherited lethal gene insertion. RIDL technology is a species specific self-limiting technology. OX513A strain (LA513A) was developed by Oxford University, UK and OXITEC (Oxford Insect Technologies) a UK based company. This strain was released in Cayman islands by The mosquito research control unit, in Brazil by Moscamed and University of Sao Paulo and in Panama by The Gorgas Memorial Institute. In all these areas releases were made in collaboration with OXITEC, UK. In all three sites the company claims that it successfully reduced field population by 90%. However, in a recent paper (B.R. Evans et al. Sci. Rep. 9, 13047; 2019), when transgenically modified Aedes aegypti containing a dominant lethal gene was released in Jacobina, Brazil for mosquito population

suppression, genetic analysis showed that portions of transgenic strain genome got incorporated into the wild population of *Aedes aegypti*.

## **Malaria**

### **1. Wolbachia-based strategy for the control of *Anopheles stephensi* transmitted malaria developed by Michigan University, USA.**

Researchers based at Michigan State University (MSU) have developed a novel natural mosquito biocontrol strategy referred to as malarial mosquito population replacement, or “MMPR.

In 2012, MSU researchers successfully introduced *Wolbachia* into *An. stephensi*, and the bacterium has been maintained in the laboratory mosquito population to the present. Subsequent laboratory research and controlled field trials in China have demonstrated that there are two significant scientific outcomes to MMPR: (1) *Wolbachia* alters the reproduction of its hosts such that it is rapidly assimilated into the general mosquito population and (2) introduction of *Wolbachia* can make *An. stephensi* inhospitable to the malaria parasites. The research has also demonstrated that this bacterium can spread into a wild type laboratory population, such that after seven reproductive cycles (generations), 100% of the *An. stephensi* population will carry this bacterium with the malaria transmission potential being significantly diminished.

(e): Indian Council of Medical Research-Vector Control Research Centre (ICMR-VCRC), in collaboration with Monash University, Australia carried out laboratory studies and developed local (Puducherry) *Ae. aegypti* strains with *Wolbachia* through backcrossing with Australian *Ae. aegypti* carrying *Wolbachia* strains viz., wMel and wAlb.

The above laboratory study is funded by ICMR for Rs 3.5 crore (approx).

Presently, colonies of two lines of *Ae. aegypti* carrying *Wolbachia* ie. wMel *Ae. aegypti* (Pud) and wAlb *Ae. aegypti* (Pud) are maintained at ICMR-VCRC insectary and further experiments are going on.

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**Annexure****State/UT-wise Dengue cases and deaths during last 3 months  
(August to October 2019)**

<b>Sl. No.</b>	<b>State</b>	<b>Cases</b>	<b>Deaths</b>
1	Karnataka	10925	10
2	Uttrakhand	9472	8
3	Maharashtra	8083	10
4	Gujarat	7677	12
5	Telangana	7490	6
6	Uttar Pradesh	4700	4
7	Bihar	4502	0
8	Tamil Nadu	3398	3
9	Andhra Pradesh	3100	0
10	Rajasthan	3008	0
11	Punjab	2877	0
12	Odisha	2103	0
13	Madhya Pradesh	1963	0
14	Delhi	1933	0
15	Kerala	1821	9
16	Puducherry	835	0
17	Jharkhand	666	0
18	Goa	609	0
19	D&N Haveli	593	1
20	Haryana	363	0
21	Jammu and Kashmir	331	0
22	Chhattisgarh	324	0
23	Manipur	278	0
24	Himachal Pradesh	243	2
25	Sikkim	168	0
26	Chandigarh	126	0
27	Daman & Diu	126	2
28	Assam	100	0
29	A&N Islands	69	0
30	Arunachal Pradesh	46	0
31	Meghalaya	44	0
32	Tripura	32	0
33	Mizoram	27	0
34	Nagaland	4	0
35	Lakshadweep	0	0
36	West Bengal	Not reported	Not reported
	<b>Total</b>	<b>78036</b>	<b>67</b>

