WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

231, de Saram Place, Colombo 01000, Sri Lanka
Tele: + 94 11 2695112, Fax: +94 11 2696583, E mail: epidunit@sltnet.lk
Epidemiologist: +94 11 2681548, E mail: chepid@sltnet.lk
Web: http://www.epid.gov.lk

WER SRI LANKA 2019

Vol. 46 No. 27 **29th– 05th July 2019**

Strengthening Mosquito Management in Construction Industry to Prevent Dengue Part I

This is the first in a series of three articles on Strengthening Mosquito Management in Construction Industry to Prevent Dengue.

Background

Incidence of Dengue has grown significantly in the recent years. According to the World Health Organization, it is widely believed that Dengue is often underestimated and underreported in most parts of the world and with the disease surveillance information already available, the actual number of dengue infections per year is estimated to be as high as 390 million (95% confidence interval being 284–528 million), of which only about 96 million (67–136 million) are known to manifest as clinically apparent infections. It is this portion which makes up the symptomatic cases that is notified though the surveillance systems. Dengue is a complex disease to control with a wide spectrum of clinical manifestations, and mostly being asymptomatic within the infected populations. This has made controlling it a challenging task to the public health system.

Dengue disease transmission relies on three (obligatory) components: the host (humans), the vector (primarily *Aedes aegypti* and *Ae. Albopictus mosquitoes*) and the Dengue virus (serotypes DENV1, 2, 3 and 4). With these components coming into the picture, approximately 3.6 billion people, nearly half the world's population are at risk of getting a dengue infection. The large-scale outbreaks of dengue fever over the past few years has raised a serious public health concern, especially in the urban and suburban populations in Sri Lanka. Dengue is an infection closely associated with unplanned urbanization and overcrowding and it is being reported in high proportions from Colombo and Gampaha districts as shown in Figure 1. It is seen that on average nearly 40% of the total Dengue caseload in Sri Lanka has been reported from the districts of Colombo and Gampaha. Colombo is the most populated district (2,324,349 at the 2012 national census) covering an area of 699 km^2. It has the highest population concentration (density) of about 3,325 persons per km^2 in the country, with the next highest population density seen in the Gampaha district (1,719 persons per km^2).

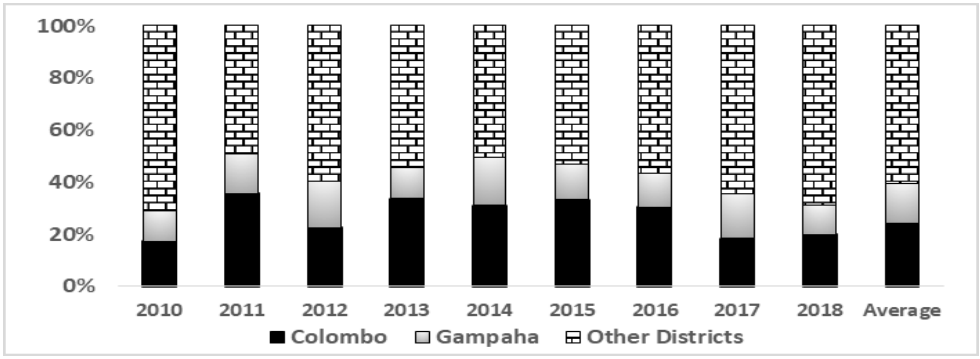

Figure 1: Dengue cases in Colombo and Gampaha district as a proportion of the total (from 2010 to 2018)

Contents **Page**

Today's society is confronted with many natural and man-made challenges that have the potential to severely affect the general health of its population, such as climate change, resource scarcity and rapid urbanization. The **construction industry is identified as a key player in the spread of dengue** with an important role from the resultant outcomes and effects of these challenges: It is responsible for a significant contribution of greenhouse gas and emission of many pollutants to the environment, which itself is a core driver of climate change; it is also one of the largest consumers of natural raw materials such as water, sand and timber, rapidly depleting such scarce resources; and many people migrate to urban areas on a daily basis from rural areas seeking employment in this industry, exposing the naïve to the diseases. Therefore, construction industry has become a key stakeholder in our response to rapid and unplanned urbanization, especially in densely populated areas like Colombo and Gampaha.

It is no doubt that the construction industry is currently booming in Sri Lanka. Although this is an indication of a healthy development situation for the country, it has created several environmental health concerns. One of the most significant concerns is related to the Dengue situation where the abundance of mosquito breeding places are seen in construction sites, especially in the urban areas of Colombo and Gampaha districts. As described earlier, Dengue cases are also reported in greater numbers from these districts.

Field inspection reports and vector surveillance studies carried out throughout the country in the recent years (2016 to 2018) have highlighted that nearly half of the construction sites had potential mosquito breeding sites. In the Western province, about 70% of construction sites were found to be having potential breeding sites. During the 2nd National Mosquito Control Week in 2018 (conducted from 26th Sept. to 02 Oct.) a total of 5,931 construction sites were inspected throughout the country, out of which 3,808 (64.2%) had potential breeding sites. Similarly, more than 10% (n=596) of those inspected construction sites throughout the country were found to have positive dengue *(Aedes)* mosquito breeding places while it was 16.3% in the Western province.

During the month of December 2018 alone, Dengue surveillance data from several major hospitals in the country were reporting a significant number of construction site workers who were working (and staying) in sites within the Colombo Municipal Council (CMC) area infected with Dengue. This caseload includes foreign nationals also and may only be a fraction of the workers affected from such construction sites (Table 1).

Mosquito Control Methods in Construction Sites

According to the vector control surveys, the major mosquito breeding sites reported from the construction sites are stagnant water pools on concrete floors and basements, water storage tanks, discarded items like plastic crates and boxes, covering items like large sheets and corrugated materials, sump pits and lift wells, scaffolding pipes and bars, drainage channels and most importantly the haphazard nature of the workers' billets.

Many control methods are in operation to control the Dengue menace. Removal of breeding sites, application of personal protection as well as space sparing are the commonly applied methods in this regard but the most economically viable and the most effective among these are the interventions carried out to disrupt the aquatic phase of the life cycle of *Aedes* mosquito. As these mosquitoes prefer small amounts of clear water stagnant areas for its egg laying, control measures could be applied to remove such breeding places from these construction sites as well as by application of chemicals like larvicides to convert such water collections inhospitable.

Compiled by
Dr. M. B. Azhar Ghouse,
Senior Registrar, Epidemiology Unit.

Table 1: Construction Site Workers from CMC area with Dengue Fever reported from several major hospitals in December 2018

Name of Hospital	No. of Construction Workers Reported as Dengue Patients
National Hospital Colombo (NHSL)	65
Colombo South Teaching Hospital	12
National Institute of Infectious Diseases (Formerly IDH)	03
District General Hospital, Nuwara-Eliya	07
Teaching Hospital Peradeniya	01
Provincial General Hospital, Badulla	03
Asiri Central, Colombo	08

to be continued ...

Table 1: Selected notifiable diseases reported by Medical Officers of Health 22nd – 28th June 2019 (26thWeek)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmania-sis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	334	5403	0	28	1	6	0	10	2	29	7	111	0	7	0	5	0	0	13	277	0	29	0	3	**49**	**100**
Gampaha	228	3429	1	20	1	4	0	3	1	18	1	57	1	3	1	4	0	1	5	232	0	12	0	83	**51**	**96**
Kalutara	153	1973	4	40	0	6	0	11	1	42	9	290	0	4	0	4	0	1	5	404	1	64	0	3	**63**	**96**
Kandy	81	1525	1	59	0	10	0	2	0	11	2	43	1	54	0	2	0	1	4	162	2	41	0	26	**64**	**100**
Matale	12	274	0	17	0	3	0	0	0	4	0	32	0	5	0	3	0	2	3	53	0	4	0	123	**57**	**99**
NuwaraEliya	7	103	1	72	0	1	0	6	0	2	3	33	1	45	1	5	0	0	2	64	0	25	0	0	**26**	**100**
Galle	236	2399	0	29	0	6	0	3	0	5	16	224	1	25	1	9	0	0	13	265	0	32	0	2	**61**	**99**
Hambantota	48	625	1	5	0	2	0	0	0	5	2	66	3	77	0	2	0	1	4	207	1	23	47	472	**74**	**100**
Matara	82	980	1	10	0	4	1	2	0	9	8	202	1	21	1	16	0	0	6	178	1	9	16	300	**60**	**100**
Jaffna	20	1965	7	120	1	11	0	17	4	38	0	23	0	260	0	3	0	0	23	197	0	12	0	0	**26**	**93**
Kilinochchi	0	105	0	12	0	1	0	9	0	0	0	18	0	24	0	1	0	0	0	6	0	5	0	7	**49**	**100**
Mannar	0	75	0	2	0	1	0	7	0	1	0	1	0	8	0	0	0	0	0	0	0	1	0	1	**54**	**99**
Vavuniya	5	184	1	10	1	10	1	22	2	9	2	44	0	4	0	0	0	0	1	59	1	9	0	1	**55**	**99**
Mullaitivu	0	103	0	6	0	0	1	9	0	2	0	18	0	6	0	0	0	0	0	3	1	6	0	4	**32**	**95**
Batticaloa	10	901	2	58	0	2	0	11	0	4	1	35	0	1	0	0	0	1	2	170	3	18	0	0	**52**	**100**
Ampara	9	127	2	40	0	2	0	0	0	8	1	24	0	1	0	10	0	0	8	129	0	7	0	4	**57**	**100**
Trincomalee	12	761	0	10	0	0	0	0	0	16	0	8	1	16	0	3	0	0	10	153	0	5	0	1	**30**	**99**
Kurunegala	37	880	6	49	0	11	0	5	0	15	0	108	0	12	2	17	0	1	8	407	6	60	24	467	**60**	**100**
Puttalam	29	338	1	18	0	2	0	1	0	3	0	23	0	9	0	1	0	0	1	105	3	29	0	7	**60**	**100**
Anuradhapura	10	289	0	25	0	6	0	4	0	5	0	87	1	27	0	18	0	2	7	363	2	54	4	291	**41**	**96**
Polonnaruwa	6	160	1	15	0	2	0	1	0	1	0	49	0	4	0	15	0	1	2	217	0	13	0	145	**64**	**98**
Badulla	25	394	3	45	0	5	0	7	0	67	7	122	3	70	0	13	0	0	6	181	2	117	0	11	**66**	**100**
Monaragala	25	274	3	35	0	4	0	0	0	77	11	168	6	67	2	38	0	0	3	183	2	99	0	17	**60**	**100**
Ratnapura	72	1271	2	57	1	24	1	8	0	11	30	474	2	22	1	18	0	4	2	229	2	92	5	91	**44**	**98**
Kegalle	57	732	1	24	0	13	0	1	0	22	9	122	2	32	2	79	0	0	8	288	2	31	0	24	**65**	**100**
Kalmune	10	523	2	25	0	0	0	1	1	11	0	22	0	3	0	1	0	0	4	147	0	15	0	0	**64**	**100**
SRILANKA	**1508**	**25793**	**40**	**831**	**5**	**136**	**4**	**140**	**11**	**415**	**10**	**2404**	**23**	**807**	**11**	**267**	**0**	**15**	**140**	**4679**	**29**	**812**	**96**	**2083**	**54**	**99**

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 28th June , 2019 Total number of reporting units 353 Number of reporting units data provided for the current week: 316 C**-Completeness

A = Cases reported during the current week. **B** = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

22nd – 28th June 2019 (26th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2019	Number of cases during same week in 2018	Total number of cases to date in 2019	Total number of cases to date in 2018	Difference between the number of cases to date in 2019 & 2018
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	00	01	00	00	00	00	01	00	03	02	43	32	34.3 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	01	01	02	00	03	00	00	02	00	09	05	186	189	-1.5 %
Measles	01	03	00	01	00	01	00	00	01	07	05	177	67	164.1 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	04	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	01	00	00	00	01	00	10	11	- 9 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	01	09	16	- 43.7 %
Whooping Cough	00	00	01	00	00	00	00	00	00	01	01	34	29	17.2 %
Tuberculosis	55	22	33	08	06	21	32	09	12	198	96	4314	3978	8.4 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS =**Congenital Rubella Syndrome

NA = Not Available

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them free of water collection.

PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

Dr. SAMITHA GINIGE
DEPUTY EPIDEMIOLOGIST
EPIDEMIOLOGY UNIT
231, DE SARAM PLACE
COLOMBO 10