WEEKLY EPIDEMIOLOGICAL REPORT

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Dengue Part II

This is secound part of the series of five articles

Transmission

Transmission of the disease involves the host (human), the Dengue virus (DENV) and the vector (mosquito). Dengue viruses are transmitted to humans by the bites of infected female Aedes species mosquitoes (*Aedes aegypti or Aedes albopictus*). The reservoirs are man and mosquito, with a man-mosquito-man transmission cycle. The urban endemic/epidemic cycle of transmission in large tropical/subtropical urban sites is the most important transmission cycle for public health purposes[5]. Multiple DENV serotypes (DEN-1, DEN-2, DEN-3, DEN-4) can co-circulate in the same locality, maintaining the transmission cycle with periodic epidemics.

Aedes aegypti, a highly domesticated, anthropophilic, small, black and white tropical mosquito is the principal vector in urban and semi-urban environments. It breeds in clear, stagnant water collections. It practices skip oviposition and the eggs can withstand drying out. The mosquito prefers to rest indoors, unobtrusively and feeds on humans during the day with peak biting activity at dawn and dusk. However, in overcast conditions and dim environments, it will bite throughout the day. The female needs a blood meal for gametogenesis[12]. They stop feeding and fly off at the slightest movement, returning to continue feeding moments later from the same or a different person. This behaviour leads to multiple people from the same household contracting DF at the same time, as the mosquito can transmit the virus to several people at the same time, making it an effective vector capable of giving rise to epidemics[5]. *Aedes albopictus* is a highly adaptive vector. It is usually seen in rural areas and bites when outdoors. It does not startle easily and therefore does not bite many individuals in a single feed. It is usually not thought to be responsible for epidemics as it is not an efficient vector, but has been implicated when *Aedes aegypti* was missing in the environment or present in small numbers.

Factors affecting transmission

The epidemiological triad of host, agent and environment are linked by the vector mosquito for the causation of dengue fever. The principal drivers of epidemic dengue are urbanization, globalization and lack of

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effective mosquito control; '**the unholy trinity**'[13]. These are in turn affected by population expansion and climate change.

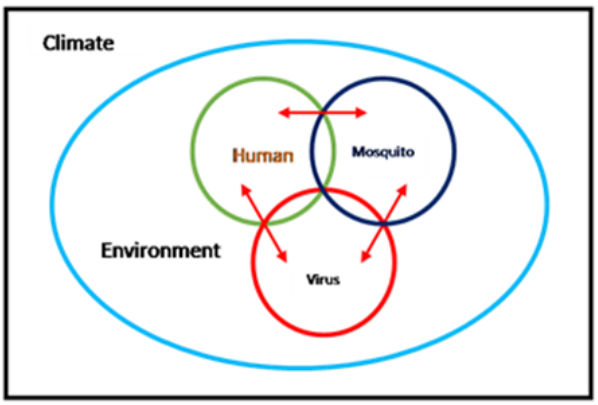

Figure 2. Factors affecting dengue transmission

References Kyle, JL., Harris, E., 2008. Annu. Rev. Microbiol. 62:72-92

The global population has almost tripled between 1950 and 2015, from 2.5 billion to a 7.3billion people of which 60% reside in Asia; which is severely affected by Dengue[14]. This unprecedented population expansion has resulted in resource scarcity and led to the migration of underprivileged people from rural to urban environments in search of employment, sustenance and improved livelihoods. The United Nations reports that '40% of the population of developing countries now live in urban areas, and is projected to rise to 56% by 2030'

This massive exodus of people into the urban areas has led to unplanned built environments, poor management of available resources, and resulted in a breakdown of infrastructure (water supply and sewage/ solid waste disposal) and ecology. Thus providing ample breeding ground for the mosquito vector to thrive, and thereby increasing the burden of Dengue

A deficiency of long-term effective mosquito control measures in these dengue-endemic areas has compounded the problem. In most countries, public health infrastructure has fallen into disrepair in the past decades, due to a lack of resources and a change in public health policies that emphasize emergency response to versus prevention of epidemics has compounded the problem. Furthermore, increased availability and utilization of air travel; have linked the world into a global village, providing an ideal mechanism for dengue transmission from one locale to another

The concentration of all health-related efforts on control, prevention and treatment of COVID 19 infection has placed immense pressure on health care systems worldwide. The "WHO has emphasized the importance of sustaining efforts to prevent, detect and treat vector-borne diseases during this pandemic such as dengue and other arboviral diseases, as the combined impact of the COVID-19 and dengue epidemics could have devastating consequences on the populations at risk

Dengue surveillance

Surveillance enables health personnel to monitor cases accurately, predict impending epidemics from a background of endemic disease and prompt the initiation of proactive prevention measures[6]. Surveillance for Dengue in Sri Lanka includes epidemiological, entomological and laboratory-based surveillance.

The **epidemiological surveillance** of DF is done routinely by the Epidemiology Unit (EU) and the National Dengue Control Unit (NDCU) of the Ministry of Health, through the passive surveillance system. The H544 hospital notification form is sent from the hospital, on suspicion, to the relevant Medical Officer of Health (MOH) and investigated by the range Public Health Inspector (PHI). The aggregated data of investigated cases are sent to the Regional Epidemiologist and the EU weekly by the MOH and reported in the weekly report of communicable diseases (WRCD) for dissemination of information and identification of trends.

The DenSys, which is a web-based surveillance system, is a recent addition to the reporting system which notifies suspected patients from sentinel hospitals in real-time, with the aim of early notification and identification of clustering of cases and possible outbreaks. The confirmed patient locations are mapped and their distribution summarized to identify the localities at high risk. This data is presented based on Grama Niladari (GN) division, and used in amplifying the dengue control activities as necessary, based on the ground situation.

Compiled by:

Dr Thilanka Bandara

to be continued ...

Table 1: Selected notifiable diseases reported by Medical Officers of Health 30th– 05th Nov 2021 (45th Week)

RDHS	Dengue Fever		Dysentery		Encephaliti		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral Hep-		Human		Chickenpox		Meningitis		Leishmania-		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	24	4634	0	10	0	1	0	5	0	3	8	183	0	1	0	2	0	3	0	22	0	12	0	1	**46**	**100**
Gampaha	15	2447	0	4	0	5	0	1	0	0	28	285	0	6	0	4	0	5	0	26	0	14	1	13	**23**	**74**
Kalutara	29	1248	0	11	0	2	0	3	0	5	14	589	0	3	0	1	0	1	0	69	0	23	0	0	**34**	**97**
Kandy	27	691	0	20	0	1	0	3	5	8	6	211	0	37	1	2	0	0	0	37	0	17	1	28	**57**	**100**
Matale	16	208	0	13	0	4	0	0	0	0	5	80	0	5	0	2	0	0	0	12	0	7	12	242	**51**	**100**
NuwaraEliya	1	44	3	15	0	2	0	4	0	0	1	62	1	39	0	4	0	0	2	28	0	7	0	1	**28**	**100**
Galle	17	400	0	10	0	1	0	5	0	7	17	665	0	27	0	2	0	0	1	57	2	35	1	2	**38**	**100**
Hambantota	6	327	1	14	0	2	0	2	0	6	7	245	1	75	0	7	0	0	1	50	1	34	5	445	**68**	**100**
Matara	6	477	1	6	0	1	0	1	0	0	9	292	0	17	0	3	0	0	0	55	0	11	7	278	**43**	**100**
Jaffna	6	132	0	45	0	3	0	15	0	27	0	18	1	443	0	0	0	6	1	31	0	3	0	2	**21**	**88**
Kilinochchi	0	25	0	24	0	0	0	2	0	10	1	56	0	82	1	1	0	0	0	10	0	0	0	1	**52**	**100**
Mannar	1	29	0	7	0	1	0	4	0	0	0	27	0	2	0	0	0	0	0	6	0	19	0	1	**35**	**100**
Vavuniya	0	38	0	4	1	2	0	1	0	1	0	23	0	2	0	1	0	0	0	6	0	1	0	1	**37**	**100**
Mullaitivu	0	6	0	3	0	0	0	0	0	1	0	33	1	9	0	0	0	0	0	9	0	6	0	0	**21**	**100**
Batticaloa	3	3022	1	35	0	5	0	3	0	36	0	46	0	0	0	1	0	0	0	14	0	24	0	0	**47**	**100**
Ampara	0	44	0	10	0	0	0	1	0	7	0	56	0	1	0	3	0	0	0	41	1	16	0	14	**57**	**100**
Trincomalee	3	135	0	0	0	0	0	0	0	2	0	4	0	0	0	2	0	0	1	18	0	2	0	0	**25**	**100**
Kurunegala	33	1107	0	19	0	4	0	0	0	3	30	444	0	30	0	4	0	2	1	50	2	86	4	351	**36**	**100**
Puttalam	7	315	0	2	0	1	0	0	0	0	1	26	0	16	0	1	0	1	1	19	1	34	0	9	**39**	**97**
Anuradhapur	2	199	0	13	0	1	0	1	0	3	1	223	0	25	0	4	0	0	0	32	2	47	5	270	**23**	**91**
Polonnaruwa	2	73	0	7	0	1	0	3	0	9	2	122	0	3	0	3	0	0	3	31	0	3	5	416	**36**	**100**
Badulla	30	350	0	11	0	0	0	3	0	0	2	292	0	44	0	35	0	0	0	42	0	18	0	20	**42**	**100**
Monaragala	7	132	1	15	0	0	0	3	0	6	4	355	0	34	12	83	0	1	0	25	0	61	2	39	**51**	**100**
Ratnapura	10	479	1	31	0	7	0	0	0	5	34	730	1	22	0	9	0	1	0	51	6	84	0	107	**34**	**95**
Kegalle	15	419	0	4	0	11	0	0	0	2	23	410	0	13	0	1	0	0	0	86	1	31	5	27	**40**	**100**
Kalmune	1	285	1	20	0	2	0	4	3	4	0	20	0	1	0	2	0	2	0	16	1	17	0	2	**44**	**100**
SRILANKA	**61**	**17266**	**9**	**353**	**1**	**57**	**0**	**64**	**8**	**145**	**19**	**5497**	**5**	**937**	**14**	**177**	**0**	**22**	**11**	**843**	**17**	**612**	**48**	**2270**	**40**	**97**
																									41	

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 05th Nov , 2021 Total number of reporting units 361 Number of reporting units data provided for the current week: 349 C**-Completeness

Table 2: Vaccine-Preventable Diseases & AFP

30th– 05th Nov 2021 (45th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2021	Number of cases during same week in 2020	Total number of cases to date in 2021	Total number of cases to date in 2020	Difference between the number of cases to date in 2021& 2020
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	01	01	00	00	00	00	00	00	02	00	56	38	47.3 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	00	00	00	00	00	00	00	00	00	01	63	158	- 60.1 %
Measles	00	00	00	00	00	00	00	00	00	00	00	11	48	- 77.0 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	03	05	- 40 %
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	00	04	31	- 87 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	09	- 100%
Tuberculosis	49	02	12	00	02	08	00	03	15	91	23	4398	5499	- 20.0 %

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

Covid-19 Prevention & Control

For everyone's health & safety, maintain physical distance, often wash hands, wear a face mask and stay home.

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**

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