



MONTHLY DENGUE UPDATE

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Ministry of Health, Sri Lanka



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SURVEILLANCE OF DAILY MIDNIGHT TOTAL OF DENGUE CASES

Dengue is an endemic life-threatening vector-borne disease in Sri Lanka. Similar to most tropical and sub-tropical countries, in Sri Lanka too, it has an urban and sub-urban spread. It is a viral infection transmitted to humans through the bite of infected mosquitoes. The primary vector that transmits the disease is *Aedes aegypti* mosquitoes and, *Ae. albopictus* plays the role of secondary vector in Sri Lanka.

Dengue virus belongs to the Flaviviridae family and there are four distinct, but closely related, serotypes of the virus that cause dengue (DENV-1, DENV-2, DENV-3 and DENV-4). Recovery from infection is believed to provide lifelong immunity against the particular serotype. However, cross-immunity to other serotypes is only partial, and temporary. Subsequent infections (secondary infection) by other serotypes increase the risk of developing severe dengue.

Dengue has distinct epidemiological patterns, associated with the four serotypes of the virus. These can co-circulate within a region, and indeed many countries are hyper-endemic for all four serotypes. Dengue has an alarming impact on both human health and the global and national economies. DENV could be introduced to new areas by infected; when susceptible vectors are present in these new areas, there is the potential for the establishment of local transmission. Prevention and control of Dengue is a daunting task that needs to be conducted with sustainable systematic approach. Surveillance is one of the key components in

prevention and control of any disease. Dengue surveillance includes morbidity and mortality of host (human), vector bionomics and serological trends of the virus.

Surveillance of midnight total of dengue cases in few selected sentinel hospitals was initiated in 2018 through the Disaster Preparedness Response Unit of the Ministry of Health. Since 2020 it is implementing by the National Dengue Control Unit. Later, the number of hospitals were increased to the current total of 72 hospitals covering all nine provinces. The Infection Control Nursing Officer (ICNO) or any other assigned Nursing Officer of such selected hospital enters the data daily online using the Google Spreadsheet shared by the National Dengue Control Unit (NDCU). It is monitored daily by one of the Medical Officers attached to NDCU for early identification of impending outbreaks. As well as it is compiled weekly and disseminated to the relevant focal points, in addition to being published in the Weekly Dengue Update.

In 2021, the task was accomplished by the dedicated involvement of the relevant field staff amidst COVID-19 Pandemic in the country. It is not deniable that there were few drawbacks in updating the midnight dengue total daily online due to many reasons such as lack of human resources, IT facilities, etc. (in addition to the workload due to COVID-19).

Table 1: Average Midnight Total of Dengue Cases in 2021

Hospital	Monthly Average												Average for 2021
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
NHSL	18	26	24	28	33	62	57	21	11	34	52	93	38
TH-LRH	2	6	7	9	6	15	16	6	9	13	19	42	13
NIID	COVID-19 Hospital					17	15	5	5	18	28	41	18
CSTH - Kalubowila	8	17	18	19	15	36	47	16	17	31	43	68	28
BH-Avissawella	16	0	1	2	3	2	4	4	4	3	3	3	4
CNTH Ragama	4	6	10	11	6	17	28	6	7	19	28	42	15
DGH- Negombo	7	9	11	8	9	14	21	11	10	29	69	133	28
DGH- Gampaha	2	3	2	3	2	4	6	2	2	7	16	23	6
BH- Wathupitiwala	2	3	3	2	2	3	3	2	2	5	12	17	5
BH- Kiribathgoda	1	1	3	3	3	6	7	1	1	7	9	15	5
DGH- Kalutara	2	4	7	8	5	5	4	4	3	12	17	28	8
BH- Panadura	3	3	2	5	4	7	9	4	4	6	13	27	7
TH-Kurunegala	4	4	6	2	2	4	4	4	1	3	3	6	4
TH-Ratnapura	2	3	3	4	3	4	6	3	2	5	6	14	5
DGH- Embilipitiya	5	4	6	27	1	3	3	3	1	1	1	5	5
TH-Kandy	4	3	4	5	1	5	8	4	4	7	8	20	6
TH-Karapitiya	2	2	3	3	3	5	6	2	3	4	9	14	5
TH-Matara	2	3	2	4	4	9	9	6	4	3	4	4	5
TH-Batticaloa	78	68	29	17	7	3	1	0	0	1	2	4	18
PGH-Badulla	1	0	1	1	2	8	6	3	4	13	28	26	8
National*	206	195	182	206	135	265	297	127	111	253	424	785	273

* The national average is for all 72 reporting hospitals

An increase in the midnight total of dengue cases in a particular hospital signals an impending outbreak in the catchment areas. Similarly, any downward trend may indicate better control of disease status in the area. Furthermore, midnight total of dengue cases can be considered as a proxy indicator for the dengue burden in the particular hospital and facilitate assessment of resource allocations and decision making for distributing the necessary and available equipment to the needy hospitals, enhancing their usage in management of dengue patients.

The Table 1 above shows the twenty hospitals which had the highest daily midnight total of dengue cases in 2021. The National Hospital of Sri Lanka (NHSL), Teaching

Hospital - Colombo South, District General Hospital - Negombo, National Institute of Infectious Diseases (NIID), Teaching Hospital - Batticaloa, Teaching Hospital - Colombo North and the Lady Ridgeway Hospital are the seven leading hospitals with the daily average midnight total of dengue cases in 2021 as of 38, 28, 27, 18, 18, 15 and 13 respectively. Among the twenty leading hospitals, 12 are from Western Province, 2 each from Sabaragamuwa and Southern Provinces and 1 each from North-Western, Central, Uva and Eastern Provinces. Out of the 12 hospitals in the Western Province, there are 5 hospitals from Colombo district while 5 and 2 are from Gampaha and Kalutara districts respectively.

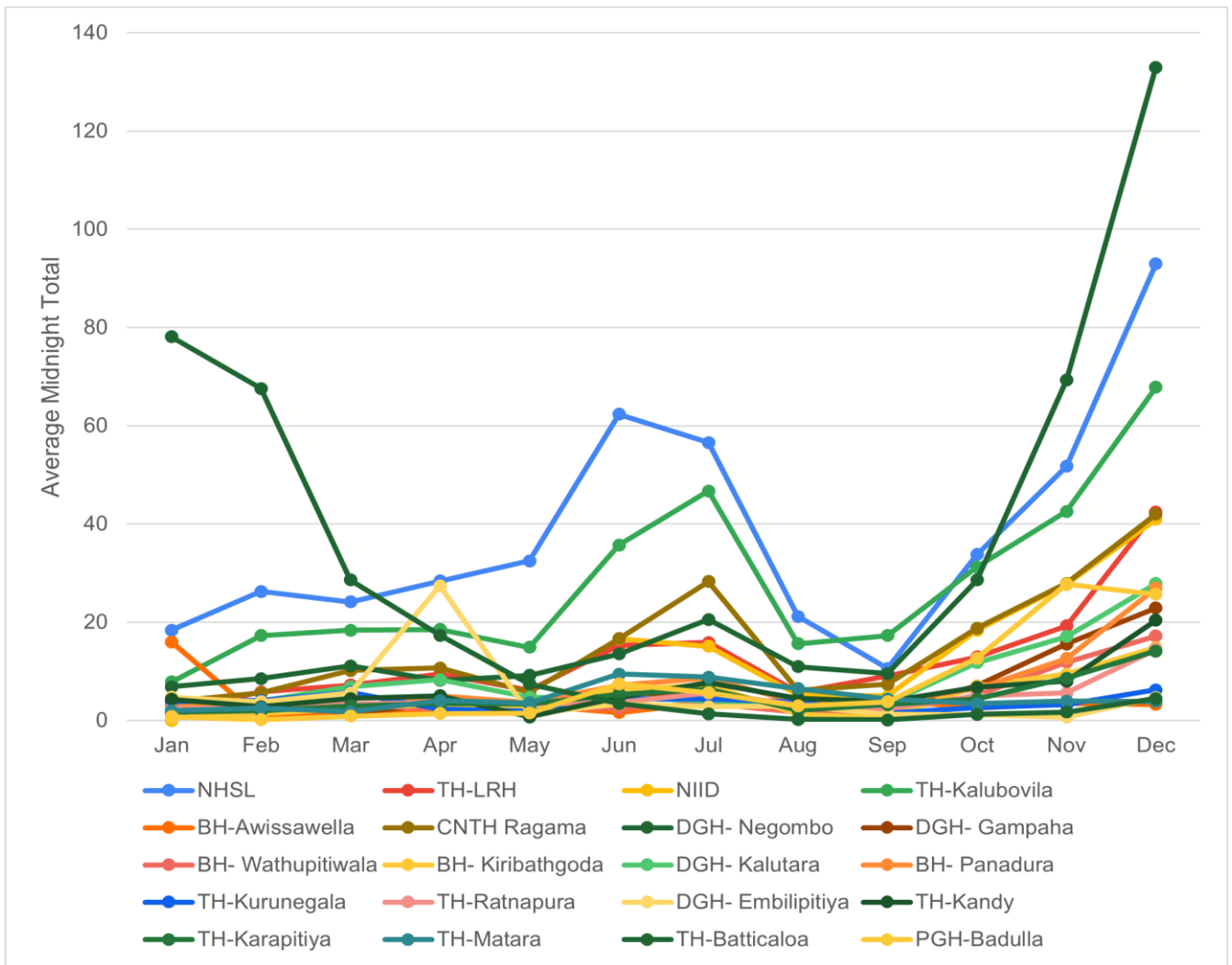


Figure 1: Monthly Average Midnight Total of Dengue Cases in high-burden hospitals in 2021

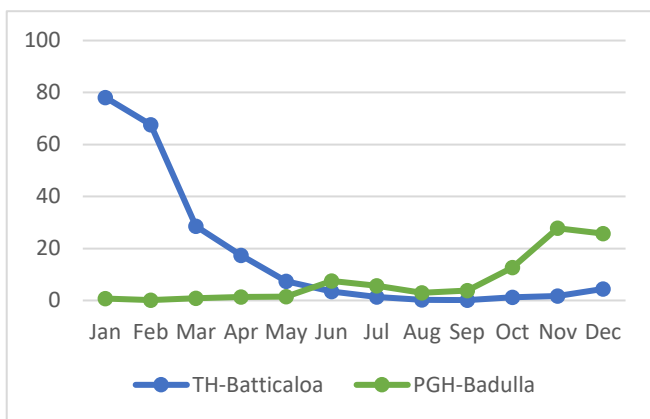


Figure 2: Monthly Average Daily Midnight Total of Dengue Cases in TH Batticaloa and PGH Badulla in 2021

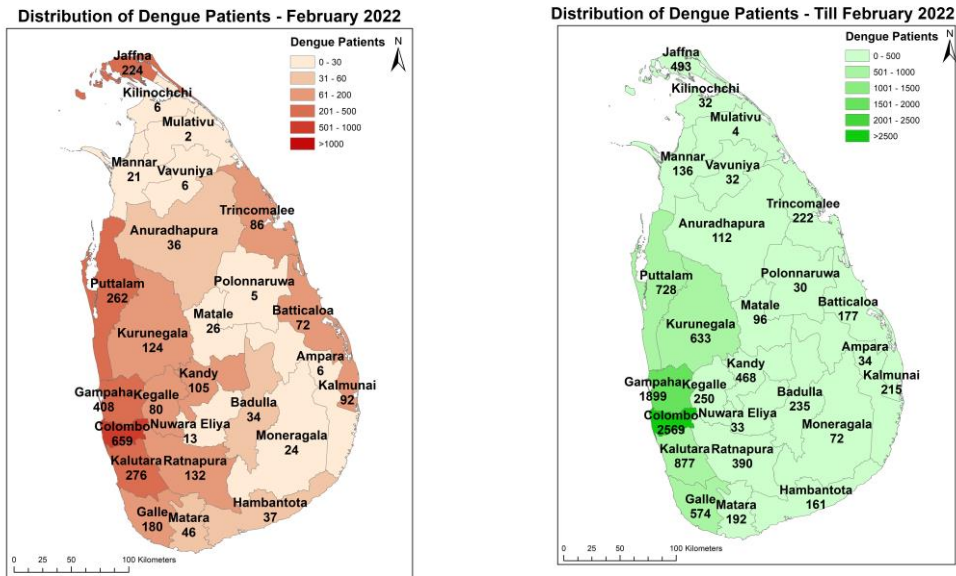
Interestingly, the TH Batticaloa is having high number of

midnight total of dengue cases during the first quarter of the year (January to March) as a continuation of outbreak which started during the latter part of 2020, in contrast to that of Provincial General Hospital – Badulla which has high number during the latter half of 2021 (June to December) [Fig. 2]. Most of the other hospitals are having persistently high numbers during whole year. Nevertheless, almost all hospitals demonstrate two distinct peaks, the first during June-July and the second during the latter part of 2021 (September to December).

The midnight total trends resemble the disease pattern reported through the DenSys – the online surveillance of suspected dengue patients presented to reporting hospitals.

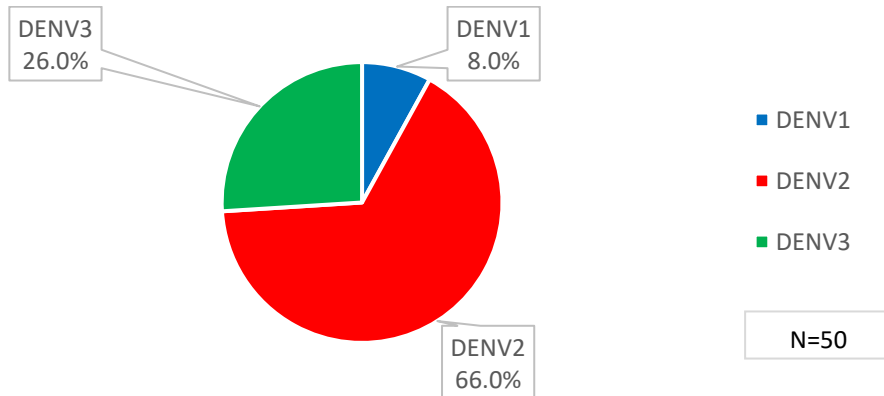
Similar to DenSys, the surveillance of midnight total of dengue cases too will be a valuable tool in forecasting any impending outbreak if it is efficiently utilized.

2. DISTRICT DISTRIBUTION OF SUSPECTED DENGUE PATIENTS IN 2022



3. VIRUS SURVEILLANCE DATA

The circulating Dengue virus serotypes in February 2022 from major hospitals in Sri Lanka



Source: Department of Virology, MRI and Centre for Dengue Research, University of Sri Jayewardenepura

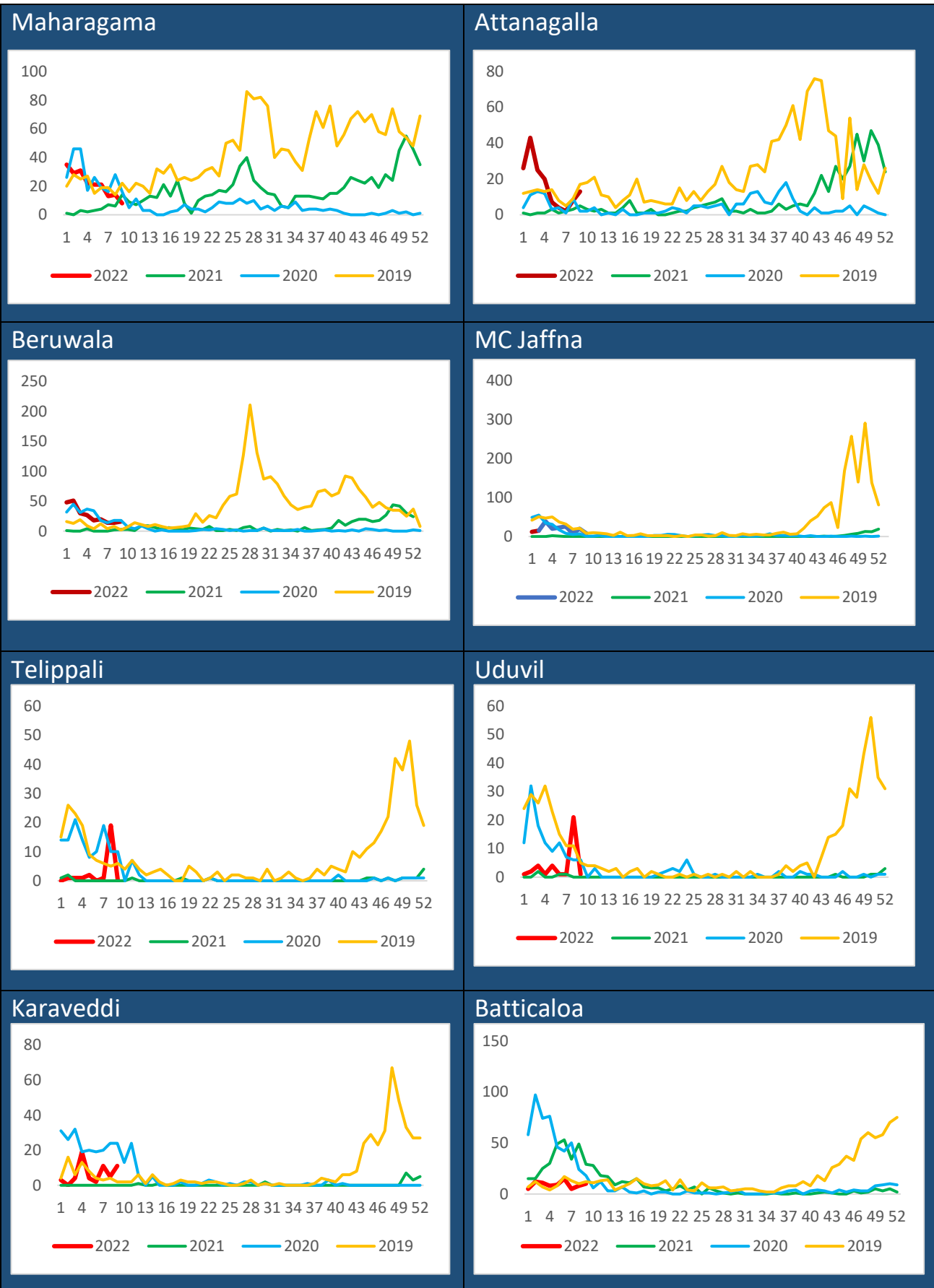
4. SUMMARY OF ENTOMOLOGICAL AND EPIDEMIOLOGICAL SURVEILLANCE DATA - February 2022

Summary of adult surveys				
District	MOH	GN area	Findings	
Kegalle	Mawanella	Kiringadeniya	Indoor - Outdoor (7.15 am - 2.35 pm)	No <i>Aedes</i> mosquito collected
Kalmunai	Pottuvil	Pothuvil-21	9.00 a.m - 12.30 p.m	No <i>Aedes</i> mosquito collected
	Akkaraipattu	KT-II	8.30 a.m - 12.45 p.m	<i>Aedes aegypti</i> – Male – 09; Female - 14 Among female: Unfed-1, Blood Fed-2, Semi gravid 5, Gravid 6
Kalutara	Horana	Munagama West	Outdoor findings (8.15 am - 2.20 pm)	<i>Aedes albopictus</i> - Female 01 (Semi gravid)

Summary of entomological and epidemiological surveillance data

Province	District	Entomological surveillance data					Epidemiologic al surveillance data	
		(Source - returns of entomology surveys received by NDCU)					(Source-DenSys)	
		No. of Premises			Main type of containers positive for larvae and percentage positivity	Month		
		Inspected	Positive Found	Positive %		February	Cumulative for 2022	
W P	Colombo	1315	76	5.8	Discarded items (31.3%), Temporary removed items (21.9%), Ornamental items (11.5%)	659	2569	
	Colombo MC				Data not Received by NDCU			
	Gampaha	1500	131	8.7	Temporary removed items (18.1%), Discarded items (15.2%), Tyres (9.4%),	408	1899	
	Kalutara	1167	75	6.4	Discarded items (30.3%),Tyres (19.7%),Covering item (11.8%)	276	877	
	NIHS	500	42	8.4	Temporary removed items (21.9%), Discarded items (16.7%), Tyres (11.9%), Other items (11.9%)			
C P	Kandy	1843	76	4.1	Ornamental items (22.7%), Water storage barrel (20%), Discarded items (18.7%),	105	468	
	Matale	400	12	3	Water storage cement tanks (35.8%), Discarded items (28.6%), Covering items (21.45)	26	96	
	Nuwara Eliya	107	6	5.6	Discarded items (50%), Ornamental items (33.3%), Concrete slabs (16.7%)	13	33	
S P	Galle	500	17	3.4	Discarded items (23.8%), Tyres (19%), water storage cement tanks (19%)	180	574	
	Hambantota	617	60	9.7	Water storage barrels (24.7%), Water storage cement tanks (13.7%), Ornamental items (13.7%)	37	161	
	Matara	1200	84	7	Ornamental items (23.7%), Water storage other item (19.6%), Discarded items (18.6%),	46	192	
N P	Jaffna	450	26	5.8	Discarded items (23%) Water storage other items 19.2%), Ornamental items (15.4%), Water storage barrel (15.4%)	224	493	
	Kilinochchi	200	12	6	Temporary removed items (33.3%), Water storage other items (20%), Tyres (13.3%), Water storage barrel (13.3%)	6	32	
	Mannar	550	22	4	Water storage Cement tank (30.8%) Water storage other items (26.9%), Water storage barrel (11.5%)	21	136	
	Vavuniya	556	40	7.2	Ornamental items (31.3%) Discarded items (27.1%), Water storage other items (16.7%),	6	32	
	Mullativu	30	3	10	Discarded items (33.3%),Water storage other items(33.3%),pet feeding (33.3%)	2	4	
E P	Ampara	173	33	19.1	Tyres (41.7%), Discarded items (39.6%), Discarded items (Waterstorage other items (6.3%), ornamental items 6.3%),	6	34	
	Batticaloa	1383	92	6.7	Other items (24.5%)), Temporary Removed items (18.2%), Discarded items (13.7%)	72	177	
	Trincomalee				Data not Received by NDCU	86	222	
	Kalmunai	1000	108	10.8	Temporary removed items (24.5%), Discarded items(25.7%), Other items (11.5%)	92	215	
N W P	Kurunegala	1205	87	7.2	Water storage other items (21%) Discarded items (21.8%), Temporary Removed items (10.4%),	124	633	
	Puttalam	705	31	4.4	Water Storage other (22.9%), Discarded items (14.3%), Tyres (11.4%)	262	728	
N C P	Anuradhapura				Data not Received by NDCU	36	112	
	Polonnaruwa	500	50	10	Discarded items (34.4%), Ornamental items (18%), Temporary Removed items (16.7%)	5	30	
U P	Badulla	254	37	14.6	Water storage barrel (22.2%), AC & Refrigerators (13.3%) ,Discarded items (11.1%)	34	235	
	Monaragala	1251	159	12.7	Discarded items (45.9%), Water Storage barrels (17.2%), Tyres (12%)	24	72	
S G P	Rathnapura	1202	132	11	Discarded items (37.7%), AC & Refrigerators (13.2%) ,Ornamental items (10.2%)	132	390	
	Kegalle	2133	89	3.3	Water storage barrel (31.9%), Ornamental items (19.3%), Water storage other items (14.3%),	80	250	
Sri Lanka		20742	1495	7.2	Discarded items (24.3%), Water storage barrel (10.9%), Tyres (10.7%)	2962	10664	

Current High Risk MOH Areas - Epidemiological Trends (Source: DenSys)



5. ENTOMOLOGICAL FORECAST OF HIGH-RISK AREAS

District	MOH Area	GN Division
Colombo	Ratmalana	Kawdana west
	Moratuwa	Katubedda
Gampaha	Negombo	Thalduwa
	Katana	Thimbirigaskatuwa
	Biyagama	Biyagama Road
	Mahara	Gonahena
Kalutara	Beruwela	757
	Kalutara	729A
	Beruwela	751A
	Panadura	Sarikkamulla
Puttalam	Chilaw	Weralabada
	Chilaw	Weralabada South
Kurunegala	MC Kurunegala	Theliyagonna
	Mawathagama	Mawathagama
Jaffna	Jaffna MC	J/77
Mannar	Mannar	Thoddaveli
	Mannar	Eluthoor
	Mannar	Uppukulam North
Rathnapura	Rathnapura PS	Batawela
Badulla	Badulla	Badulla North
Galle	Galle	Thalapitiya
Batticaloa	KPC	206 C
	Kattankudy	167A
	Arayampathy	Selvanagar East
	Oddamavadi	207B

In February, dengue vector surveys were conducted in 347 GN areas inspecting 20,742 premises island wide. Here, the entomological forecasting has been done by considering the districts currently recording a high number of Dengue cases that are also recorded high values for entomological indices against their conventional threshold values.

6. SPECIAL ACTIVITIES AND EVENTS CONDUCTED BY THE NATIONAL DENGUE CONTROL UNIT



**DENGUE AMIDST THE PANDEMIC
INTERNATIONAL RESEARCH AND INNOVATIONS
SYMPOSIUM: MARCH 2022**

**PRE-CONGRESS SESSION 01
25.02.2022- KANDY**

**EMPOWERING COMMUNITIES THROUGH
EFFECTIVE COMMUNICATION IN DENGUE**

*Scenario-based training for Public Health
Midwives*



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Any comments, suggestions, and contributions for the MDU Sri Lanka are welcome.

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