MONTHLY DENGUE UPDATE

A publication of the National Dengue Control Unit

Ministry of Health, Sri Lanka

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Contents

Leishmaniasis

Leishmaniasis is a vector born disease caused by flagellated protozoan parasites of the genus *Leishmania* and it is transmitted through bites of infected female sand flies (*Phlebotomine)*.

It is found in the part of the tropics, subtropics and southern Europe. There are three main forms of the disease, cutaneous leishmaniasis (CL), mucosal leishmaniasis (ML) and visceral leishmaniasis (VL). Post – kala- azar dermal leishmaniasis (PKDL) is another type of visceral leishmaniasis. Cutaneous leishmaniasis is the most common form of the disease, while VL is the most serious and is almost always fatal if untreated. Although CL is not life threatening, it can have devastating effects on local communities. It causes disfiguring skin lesions that can leave lifelong scars and lead to severe social stigma, especially for women and children.

Sand flies can bite and infect anyone of any age in areas where leishmaniasis is found. The disease is much more common in rural areas than in cities. There are several risk factors for leishmaniasis, including socioeconomic status (the disease is common in some of the poorest areas globally), malnutrition, and poor housing, and there is some evidence of genetic predisposition. Additional environmental risk factors include deforestation, mining, building damns, changing or creating new irrigation schemes and other aspects of urbanization, which can lead to increased exposure to sand flies and consequently to leishmanial infection.

Global Situation of Leishmaniasis

Leishmaniasis in the Western Hemisphere is known as New World leishmaniasis, and is found Mexico, Central America and South America. In the Eastern Hemisphere, the disease is known as Old World leishmaniasis, and is found in certain parts of Asia, the Middle East, southern Europe (particularly the Mediterranean area), North Africa and tropical regions of Africa. New World and Old World leishmaniasis are caused by different *Leishmania* species.

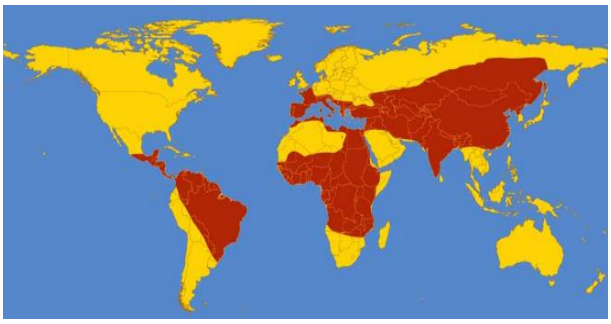

Figure I: Global distribution of Leishmaniasis

Out of 200 countries and territories reporting leishmaniasis to World Health Organization (WHO), 98 are endemic for leishmaniasis. Out of these 71 countries are endemic for both VL and CL, 8 countries are endemic for VL, and 19 countries are endemic for CL only. Over 90% of the global VL case burden is from seven countries namely Brazil, Ethiopia, India, Kenya, Somalia, South Sudan and Sudan and nearly 85% of the global CL burden is from 10 countries i.e., Afghanistan, Algeria, Brazil, Colombia, Iraq, Pakistan, Peru, the Syrian Arab Republic, Tunisia and Yemen (Figure 1).

It is estimated that 700,000 to 1 million new cases of leishmaniasis occur annually globally. The estimated number of deaths due to leishmaniasis is 30,000.

Country Situation

Sri Lanka was considered free from leishmaniasis until 1990, except for cases reported from workers returning from the Middle East and Africa. In 1992 the first locally transmitted/acquired case was reported. Parasites were isolated from the patients and *Leishmania donovani* was identified as the causative organism of CL. A large number of suspected cases were identified after 2001. The civil war existed in the country during those years may have contributed to this situation due to movement of military personnel to previously uninhabited areas near forests and due to resettlement of civilians away from conflict zones. Leishmaniasis was made a notifiable disease since 2009 (Figure 2).

An increasing number of patients has been observed in 2018 and 2019. Almost 90% of this total caseload was reported from five districts namely, Anuradhapura, Hambantota, Polonnaruwa, Kurunegala and Matara. First locally transmitted/acquired case was reported in Ambalantota (in 1992) and the second case was reported from Mahiyangana in 1995.

Although CL is the most common disease in Sri Lanka, few MCL and VL patients have been reported in the past.

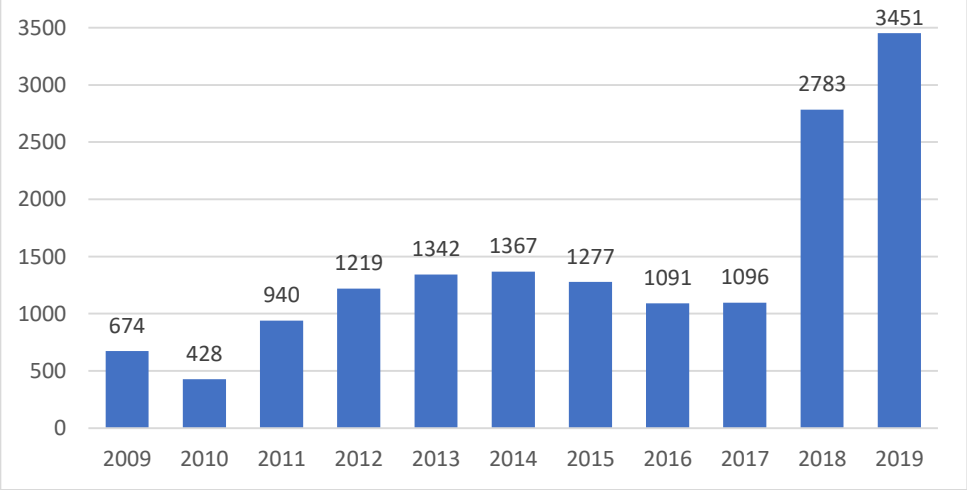

Figure 2: Leishmaniasis patients reported during 2009 – 2019 in Sri

Leishmaniasis vectors

Figure 3: *Phlebotomus argentipes*

Sand flies are very small (1.5-3.5mm in length) and noiseless flies. They have four stage life cycle. Larval development involves four instars, and is completed after 20-30 days depending on species, temperature and nutrient availability. Female sand flies usually lay 30-70 eggs during a single gonotrophic cycle, which are deposited in cracks and holes in the ground or in buildings, animal burrows and among tree roots. The eggs require a microhabitat with high humidity in order to survive, but eggs are not laid in water.

Adult sand flies are weak flies, travelling with a characteristic short hopping flight, and they usually disperse no more than a few hundred meters from their breeding sites. Sand flies feed at dusk and during the night, when temperature falls and humidity rises although daytime biting can occur indoors in darkened rooms or among shaded vegetation/trees.

Occupational groups such as those working in forest areas are at risk and living in houses in close proximity to forests are also considered as risk factors.

In Sri Lanka two species of sand flies (plebotomine) are reported; *Ph. argentipes* (Figure 3) and *Ph. stantoni.* The *Ph. stantoni* is a jungle species feeding on wild rodents. The *Ph. argentipes* is anthropophagic, but it is also zoophilic feeding preferentially on cattle. This is a significant factor because *Ph. argentipes* is the vector of *L. donovani* which causes VL. Humans are accidental hosts but can also act as a reservoir. Wild rodents (rats), marsupials, and carnivores often including jackals, domestic dogs and other mammals are the reservoir hosts.

Prevention of Leishmaniasis through vector control methods

Vector control activities should be based on prior knowledge on ecology of the area, seasonality of transmission, modes of transmission such as anthroponotic or zoonotic. Vector bionomics including species distribution, behavior such as endophilic, peri-domestic or sylvatic are also important for vector control methods.

Indoor Residual Spraying (IRS) with a non-pyrethroid insecticide, preferably through annual rotations of different classes of insecticide with different biochemical mode of action is a method of vector control.

IRS is more effective for endophilic sandflies since they are weak flies. This can be done for the vector resting surfaces such as internal walls, eaves and ceilings of houses or structures (including domestic animal shelters). Staying away from shrub jungles and avoiding outdoor activities as much as possible, especially from dusk to dawn when the sand flies are most active is another strategy to minimize the transmission. In addition, usage of clothing that cover extremities, application of recommended insect repellents in exposed areas, and usage of long-lasting insecticide treated nets – with pyrethroid chemicals can mitigate transmission.

Diagnosis and treatment

For diagnosis, patients must be referred to the closest dermatology clinic where expertise and facilities for skin biopsy and parasitological microscopy are available. Before considering treatment, the first step is to make sure the diagnosis is correct.

Treatment decisions should be individualized. For many cases of Leishmaniasis, decisions on treatment is based on factors such as types of the disease, species of the parasite, geographical location of where the patient got infected, patient's underlying health and potential toxic effects of the drugs.

There are no vaccines or drugs to prevent infection.
The best way to prevent infection is to protect themselves from sand fly bites.

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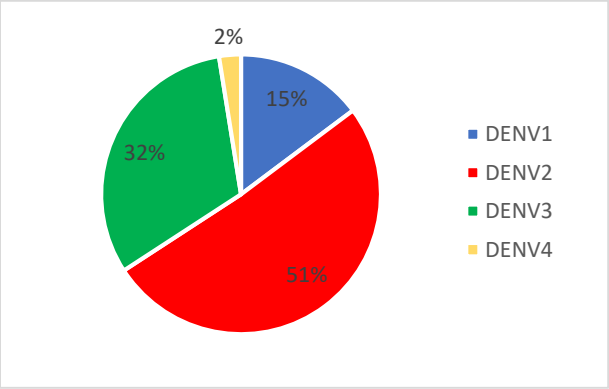
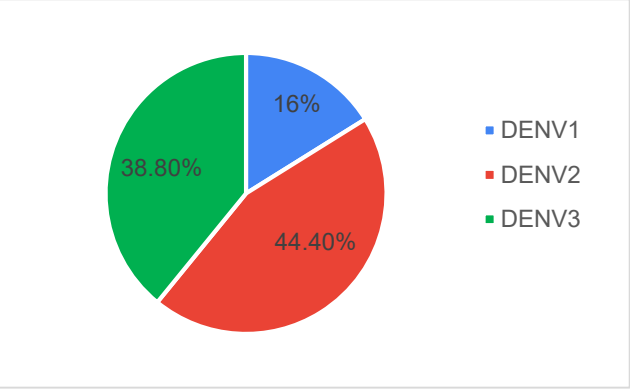
2. VIRUS SURVEILLANCE DATA

The Circulating Dengue Virus Serotypes in 2021 from major hospitals in Colombo district



Cumulative from January to end of October 2021 (n = 237)



For the month of October (n=18)

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

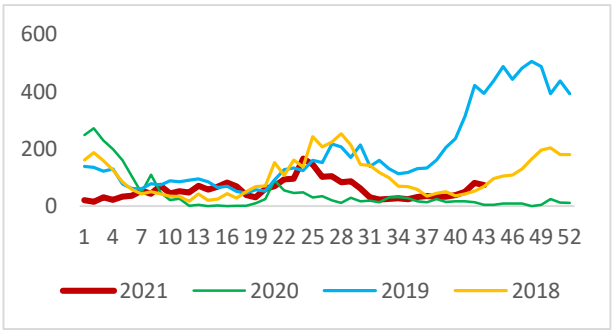
3. SUMMARY OF ENTOMOLOGICAL AND EPIDEMIOLOGICAL SURVEILLANCE DATA – October 2021

Province	District	Entomological surveillance data (Source - returns of entomology surveys received by NDCU)				Epidemiological surveillance (Source-DenSys)	
		No. of Premises				Month	
		Inspected	Positive Found	Positive %	Main type of containers positive for larvae and percentage positivity	October	Cumulative
WP	Colombo	2123	279	13.1	Discarded items (18.9%), Temporary Removed items (15.3%), Tyres (13.1%)	873	4826
	Colombo MC				Data not Received by NDCU	259	2488
	Gampaha	1963	257	13.1	Discarded items (2 3.9%), Temporary Removed items (19.2%), Covering Items (10.4%)	685	3341
	Kalutara	1701	175	10.3	Discarded items (31.4%), Temporary Removed items (18.5%), Water storage barrels (8.7%)	185	1203
	NIHS	611	77	12.6	Temporary Removed items (32.4%), Discarded items (15.7%), Covering Items (10.2%)	106	373
CP	Kandy	1355	103	12.6	Discarded items, (28.2%), Tyres(13.7%), Ornamental item (12.2%),	148	956
	Matale	800	56	7	Discarded items (46.6%), Ornamental item (16.9%), Covering Items (12.3 %)	28	207
	Nuwara Eliya				Data not Received by NDCU	10	70
SP	Galle	2200	193	8.8	Discarded items (28.8%), Ornamental item (15.8%), Temporary Removed items (9.6%) Covering items (12.76%)	69	433
	Hambantota	1340	118	8.8	Ornamental item (17.5%), Discarded items (16.5%), Temporary Removed items (11.7%),	40	353
	Matara	1200	121	10.1	Discarded items (27.3%), Water storage other item (14.4%), Water storage barrels (14.4%),	60	571
NP	Jaffna	999	102	10.2	Water storage other items (20%), Ornamental items (18.3%), Ornamental items (9.16%)	1	39
	Kilinochchi				Data not Received by NDCU	0	14
	Mannar	609	177	29.1	Discarded items (32.4%), Water storage other items (7%), other items (15.8%)	3	27
	Vavuniya	1375	155	11.3	Discarded items (43.5%), Ornamental items (22.9%), Water storage other items (9.2%)	3	37
	Mullativu				Data not Received by NDCU	1	1
EP	Ampara	336	22	6.5	Discarded items (35%), Water storage barrels (15%), Tyres (10%), gutters (10%)	7	74
	Batticaloa	845	60	7.1	Temporary Removed items (16.3%), Discarded items(12%) Ornamental items (14.1%)	21	3408
	Trincomalee	1541	152	9.9	Temporary removed items (27.2%), Discarded items (14.6%), Water storage other items (10.6%)	10	153
	Kalmunai				Data not Received by NDCU	6	244
NWP	Kurunegala	1068	164	15.4	Discarded items (17.7%), Covering items (12.7%), Ornamental items (11.4%)	139	1154
	Puttalam	511	49	9.6	Temporary Removed items (37.5%), Water Storage other (21.9%), Covering Items (18.2%)	35	378
NCP	Anuradhapur				Data not Received by NDCU	19	298
	Polonnaruwa	668	42	6.3	Discarded items (34.8%), Ornamental item (10.9%), Water Storage barrels (10.9%)	13	79
UP	Badulla	180	53	29.4	Other items (40.2%), Water storage other items (15%), Non used	105	356
	Monaragala	1500	236	15.7	Discarded items (48.3%), Ornamental item (12.7%) , Water Storage barrels (11.8%)	12	146
SGP	Rathnapura	1702	175	10.3	Discarded items (38%), Water storage barrels (13.1%), Tyres (10%)	91	667
	Kegalle	2694	206	7.6	Discarded items (27.3.6%), Tyres (12.8%) Water storage other (12.2%)	50	501
Sri Lanka		**27321**	**2972**	**10.87**	**Discarded items (27.5%), Ornamental items (9.5%), Water storage other items (9.5%)**	**2979**	**22397**

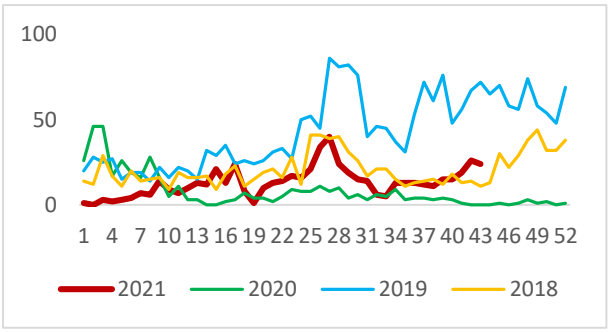
Summaries of Adult Surveys				
District	**MOH**	**GN area**	**Findings**	
Batticaloa	Kattankudy	167A	Indoor Findings 8.0 am- 1.0 pm	*Aedes aegypti* - 09 Female (05 Blood fed, 04 Semi gravid) and 03 Male

Current high risk MOOH - Epidemiological trends (Source: DenSys data)

MOH MC Colombo



MOH Maharagama



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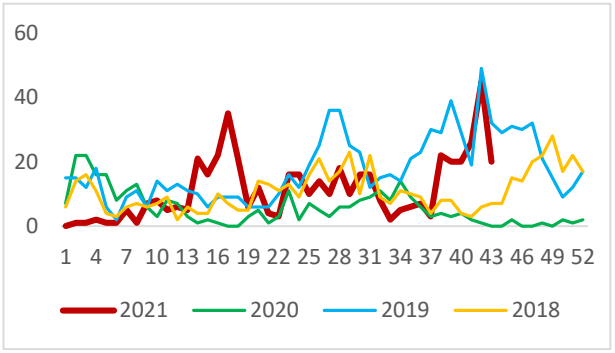
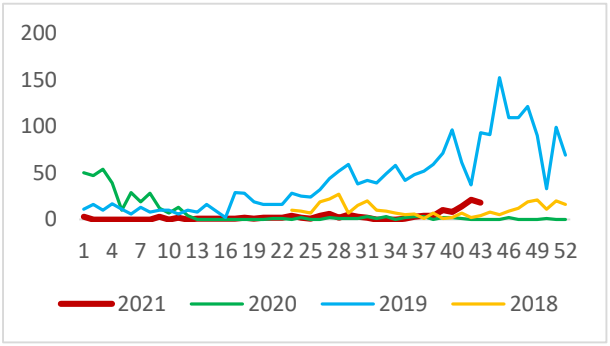
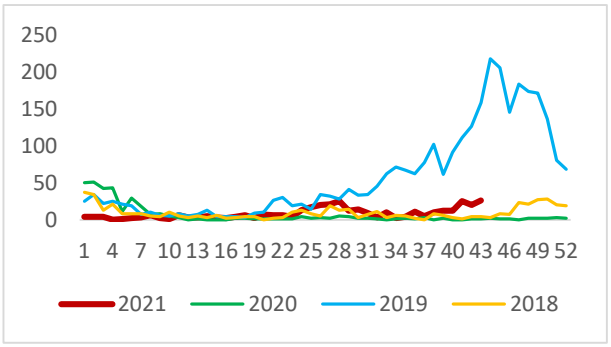


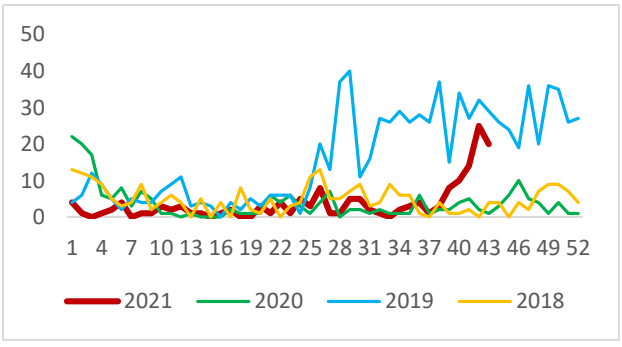
MOH Gothatuwa



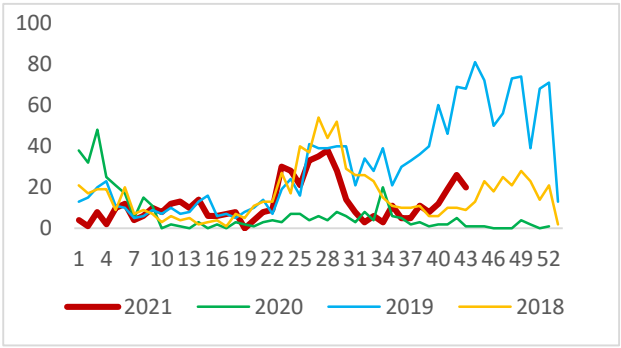
MOH MC Negombo



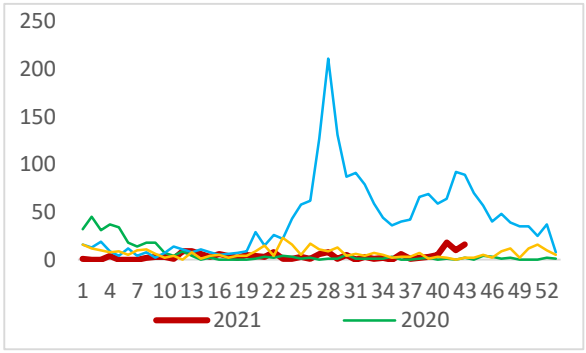
MOH Seeduwa



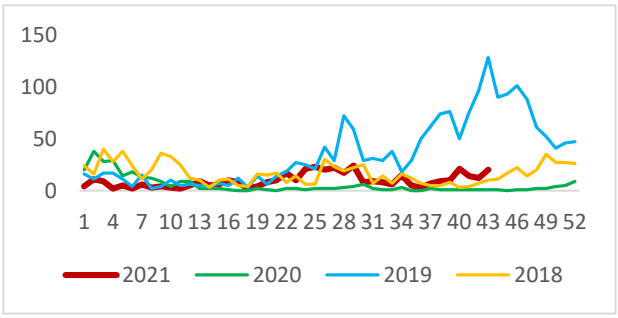
MOH Kelaniya



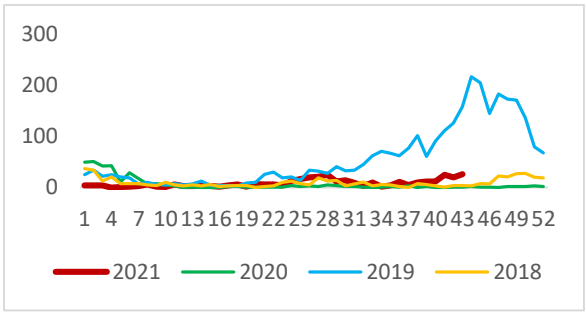
MOH Beruwala



MOH Panadura



MOH Badulla



4. DENGUE FORECAST

Entomological forecast of high-risk areas		
RDHS	**MOH**	**GN Division**
Colombo	Moratuwa	Kaldemulla
	Moratuwa	Katubedda
Gampaha	Wattala	Mabola
Jaffna	Nallur	Thalaiyadi ln
Rathnapura	Embilipitiya	Moraketiya
Matara	Weligama	Kapparatota
Galle	Galle	Katugoda

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

Webinar on the "Management of Dengue in Adults and Children" - a clinical update for medical Doctors and Nurses of Eastern Province" - 06.10.2021

Speakers

- Dr. K.T. Sundaresan
  Consultant Physician/ TH Batticaloa
- Dr. Arsath Ahmed
  Consultant Paediatrician/ BH Kattankudy
- Ms. A.L. Rizmy
  Nursing Officer/ Ashroff Memorial Hospital, Kalmunai

Supervision of MOHH and scenario based learning programme for MOOH of Batticaloa – 11.10.2021 & 12.10.2021

Supervision of MOHH and scenario based learning programme for MOOH of Kalmunai – 12.10.2021 & 13.10.2021

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

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