



# WEEKLY EPIDEMIOLOGICAL REPORT

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## Epidemiology of leptospirosis outbreak in 2008

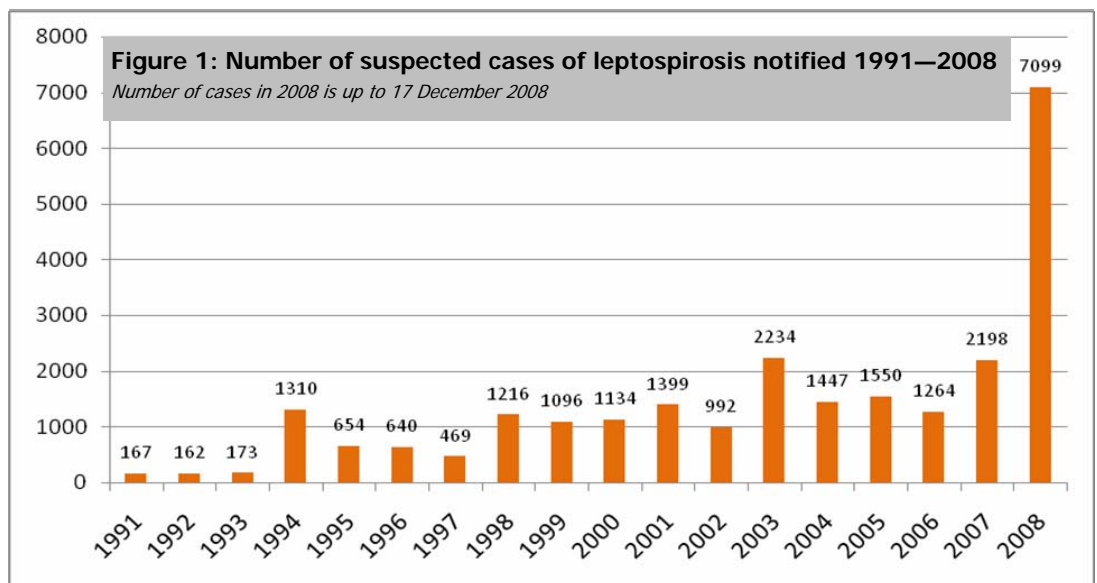
In 2008, Sri Lanka has experienced the largest ever recorded outbreak of leptospirosis. Epidemiological and laboratory data strongly suggest that the organism transmitted from rodents in paddy fields is responsible for the current outbreak.

**History:** Human leptospirosis (Weil's disease) was first described in Sri Lanka in 1953. In the early days, majority of cases was reported from Ratnapura (Sabaragamuwa Province), then Ragama, Colombo and Kalutara (Western Province), Matara (Southern Province), and to a lesser degree from Kandy and Matale (Central Province) and Anuradhapura (North Central Province). It is recorded that reporting varied from time to time and place to place depending on the clinician working in that place. In 1959, for the first time *L. icterohaemorrhagiae* was isolated in Ceylon from the blood of a patient in Colombo and soon after from the kidney of a sewer rat trapped in the vicinity of that

patient's home.

**Current situation:** Over the past decade or more leptospirosis remains endemic in Sri Lanka with an outbreak situation once in every four to five years (Figure 1). Beginning from the latter part of the year 2007, Sri Lanka is experiencing the largest ever recorded outbreak of leptospirosis. When compared with the year 2006, the increase in the number of cases reported in 2008 has surpassed 400% already. Based on the notification of suspected cases, the incidence of leptospirosis in Sri Lanka in 2008 is 35.7 per 100,000 population.

The peak of the current outbreak with notification of 368 cases was in the week 39 (Week ending 26<sup>th</sup> September 2008). At present, the outbreak is in the declining phase and the total number notified up to 17<sup>th</sup> December 2008 was 7099 patients. There were 204 deaths with a



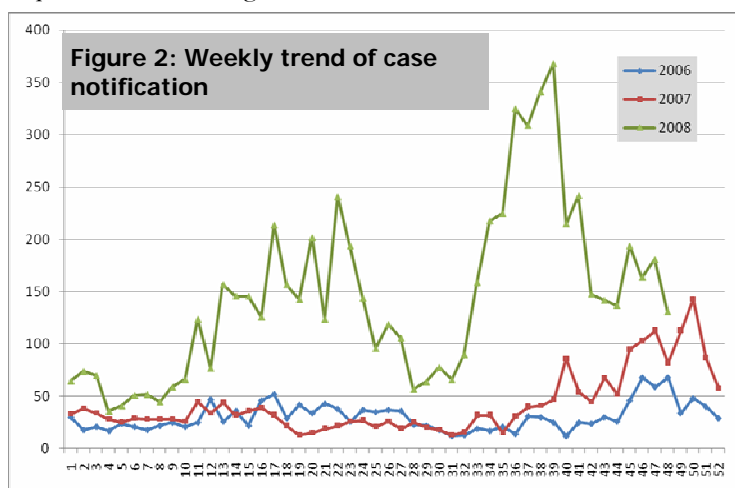
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case fatality rate of 2.9%. In 2007, the case fatality rate was 1.5%.

Worst affected districts are Colombo, Gampaha and Kalutara in the Western Province, Matale and Kandy in the Central Province, Kurunegala in the North Western Province, Kegalle in the Sabaragamuwa Province, and Matara and Galle in the Southern Province. The highest incidence is in the Matale District with 150.5 per 100,000 population. The next highest incidence of 66.5 per 100,000 population has been reported from the Kegalle district.



Special investigations: By 11<sup>th</sup> December 2008, a total of 1957 completed Special Investigation Forms have been received by the Epidemiology Unit. This includes 261 (13%) patients treated at Base Hospital Horana, 230 (13%) at District General Hospital Matale, 227 at Teaching Hospital Colombo South, 192 at General Hospital Kegalle, 138 (7%) at Base Hospital Homagama, 160 (8%) at Teaching Hospital Kurunegala and 115 (6%) at Teaching Hospital Kalutara.

The mean age of patients is 40 years (SD 14.7) and 81% were males. The commonest symptoms were acute fever (98.6%), myalgia (91.0%), headache (90.4%), conjunctival suffusion (71.8%) and prostration (37.0%). Anuria/oliguria were reported in 33.4% while jaundice and proteinuria were in 24% and 10% of patients respectively. Cardiac symptoms (5%), haemorrhagic manifestations (5%), meningeal irritation (3%) and skin rash (3%) were less commonly reported.

The majority (61%) has been exposed to paddy fields. Another 24% provided a history of exposure to marshy or muddy lands while exposure to animal husbandry or veterinary environment is rare (0.4%). Based on the available data, 931 (47.6%) were not on prophylaxis while only 26 (1.3%) were on prophylactic treatment at the time of getting the infection. Prophylaxis history of 1000 (51.1%) patients was not available.

Out of the total of 1957, results of Microscopic Agglutination Test conducted at Medical Research Institute, were available

for 144 patients. 71 (49.3%) patients were positive (titre level  $\geq$  800) and 30 (20.8%) were equivocal (titre level  $<$ 800) while 43 (29.9%) showed negative results.

Laboratory diagnosis of leptospirosis: Up to the end of November, Medical Research Institute has performed more than 4000

Microscopic Agglutination Tests (MAT) with samples received from all over the country. A preliminary analysis of 1414 tests revealed that 37% were positive while 24% and 39% were equivocal and negative respectively (Table 1). Among positives, 78% were males. 13% were females while the gender of 9% was not available. The mean age of positive patients was 40.2 years (SD 14.4).

Identification of serovars: Using Microscopic Agglutination Test, identification of serovars in 9 samples was carried out at the Veterinary Research Institute, Peradeniya. Results are displayed in Table 2. Most of the serovars identified are rodent specific.

Conclusion: Majority of the affected are males in the productive age group and provided an occupational exposure in paddy fields. Detected serovars of *Leptospira* are mainly rodent specific. This strongly suggests that rodents in paddy fields are responsible for the current leptospirosis outbreak. Reasons for an unprecedented increase are yet to be determined, but may be due to the heavy rainfall experienced throughout the year and increased agricultural activities when compared with the previous years.

Reference:

Administrative Report of the Director of Health Services for the Year 1953. Ceylon Government Press.  
 Nityananda K. 1970. Leptospirosis in Ceylon – Epidemiological & Laboratory Investigation. Report No FE-381-4 (Annual Report) US Army Research and Development Group Far East, San Francisco, US.

**Table 1: Leptospirosis antibody titre levels detected at MRI**

Titre level	No	%
100	159	11.2
200	96	6.8
400	81	5.7
800	84	5.9
1600	125	8.8
3200	321	22.7
3600	1	0.1
0	547	38.7
<b>Total</b>	<b>1414</b>	<b>100.0</b>

**Table 2: Leptospirosis serovars detected from patients in Sri Lanka - 2008**

Pt. No	Serovar	Titre Level
01	<i>pyrogenes</i>	400
	<i>australis</i>	400
02	<i>australis</i>	1600
03	<i>australis</i>	100
04	<i>weerasinghe</i>	400
	<i>pyrogenes</i>	100
	<i>australis</i>	200
	<i>gem</i>	200
05	<i>canicola</i>	800
	<i>pyrogenes</i>	200
	<i>gem</i>	800
06	Not detected	
07	<i>pyrogenes</i>	100
08	<i>pyrogenes</i>	100
09	Not detected	

This article was prepared by Dr Sudath Samaraweera, Consultant Community Physician

Table 1: Vaccine-preventable Diseases &amp; AFP

13<sup>th</sup> - 19<sup>th</sup> December 2008 (51<sup>st</sup>Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	02 CB=1 GM=1	01 ML=1	00	00	00	00	00	00	01 RP=1	04	01	99	85	+16.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	01	00	-
Measles	01 GM=1	00	00	00	00	00	00	00	00	01	01	107	80	+33.8%
Tetanus	00	00	00	00	00	00	00	00	00	00	04	36	38	-05.3%
Whooping Cough	00	00	00	00	00	00	00	00	02 KG=2	02	00	55	47	+17.0%
Tuberculosis	67	64	05	02	07	00	03	01	00	149	145	8181	9664	-15.3%

Table 2: Newly Introduced Notifiable Disease

13<sup>th</sup> - 19<sup>th</sup> December 2008 (51<sup>st</sup>Week)

Disease	No. of Cases by Province									Number of cases during current week in 2008	Number of cases during same week in 2007	Total number of cases to date in 2008	Total number of cases to date in 2007	Difference between the number of cases to date between 2008 & 2007
	W	C	S	N	E	NW	NC	U	Sab					
Chicken-pox	17	04	23	11	01	10	01	06	11	84	50	5424	3380	+60.5%
Meningitis	07 CB=2 GM=3 KL=2	01 ML=1	01 GL=1	00	03 BT=3	02 KR=2	00	00	04 RP=1 KG=3	18	11	1280	762	+68.0%
Mumps	02	03	06	02	02	02	01	01	02	21	39	2860	2218	+28.9%

## Key to Table 1 &amp; 2

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

DPDHS 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.

Table 3: Laboratory Surveillance of Dengue Fever

13<sup>th</sup> - 19<sup>th</sup> December 2008 (51<sup>st</sup>Week)

Samples	Number tested		Number positive *		Serotypes										
					D <sub>1</sub>		D <sub>2</sub>		D <sub>3</sub>		D <sub>4</sub>		Negative		
	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	GT	AH	
Number for current week	00	03	00	00	00	00	00	00	00	00	00	00	00	00	00
Total number to date in 2008	124	163	09	25	00	00	06	10	01	09	00	00	02	00	

Sources: Genetech Molecular Diagnostics &amp; School of Gene Technology, Colombo [GT] and Genetic Laboratory Asiri Surgical Hospital [AH]

\* Not all positives are subjected to serotyping.

NA= Not Available.

## Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Human Rabies, Dengue Haemorrhagic Fever, Japanese Encephalitis, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

National Control Program for Tuberculosis and Chest Diseases: Tuberculosis.

**Table 4: Selected notifiable diseases reported by Medical Officers of Health**  
13<sup>th</sup> - 19<sup>th</sup> December 2008 (51<sup>st</sup>Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received Timely*
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	19	1574	6	296	0	15	9	202	2	143	15	1057	0	8	1	116	0	0	77
Gampaha	19	953	9	235	0	20	0	62	8	119	5	825	1	9	2	196	0	7	64
Kalutara	9	475	3	363	0	14	1	87	0	44	16	679	0	4	0	47	0	2	83
Kandy	16	352	3	315	2	12	1	67	0	100	19	531	5	106	5	131	0	2	76
Matale	20	203	4	234	1	5	0	57	0	17	25	831	0	2	0	31	0	0	75
Nuwara	1	30	8	314	0	6	0	257	1	169	3	76	1	44	0	108	0	1	85
Galle	2	107	3	216	0	23	0	18	0	50	5	441	0	16	0	8	0	5	88
Hambantota	5	127	1	139	0	8	0	8	2	22	3	137	1	99	0	17	0	1	73
Matara	20	369	7	238	0	14	0	36	0	15	6	494	4	237	1	15	0	1	88
Jaffna	0	60	0	155	0	4	0	261	0	20	0	1	0	167	0	43	0	0	0
Kilinochchi	0	1	0	161	0	0	0	1	0	4	0	2	0	0	0	2	0	0	0
Mannar	4	30	0	29	0	6	0	165	0	0	0	0	0	1	1	17	0	1	50
Vavuniya	0	12	0	77	0	3	0	15	0	25	0	6	0	1	0	5	0	0	100
Mullaitivu	0	0	0	62	0	0	0	16	0	13	0	0	0	1	0	10	0	1	0
Batticaloa	1	88	22	270	0	8	0	32	0	30	0	12	0	0	0	95	0	10	73
Ampara	0	33	1	272	0	0	0	9	0	348	0	25	0	0	0	14	0	0	43
Trincomalee	0	185	1	122	0	2	0	13	0	14	0	33	0	17	0	15	0	0	60
Kurunegala	6	360	8	271	1	17	0	57	0	30	3	692	3	37	4	88	1	10	95
Puttalam	1	286	5	183	2	12	1	163	1	42	0	67	0	38	0	34	0	5	67
Anuradhapu	0	120	5	173	0	10	0	12	0	56	2	255	0	14	0	16	0	3	53
Polonnaruw	0	66	2	149	0	1	0	29	0	25	10	111	0	1	0	22	0	0	57
Badulla	1	107	6	512	0	9	1	128	1	113	1	73	1	129	10	192	0	1	80
Monaragala	3	63	3	361	0	4	1	56	0	124	1	98	0	108	3	62	0	2	45
Ratnapura	6	312	4	439	0	34	0	54	1	85	2	256	0	82	0	63	0	0	67
Kegalle	13	457	2	318	0	25	0	86	0	25	7	589	0	74	2	523	0	1	82
Kalmunai	0	38	4	330	0	2	0	17	0	16	0	4	0	3	0	28	0	0	54
<b>SRI LANKA</b>	<b>146</b>	<b>6408</b>	<b>107</b>	<b>6234</b>	<b>6</b>	<b>254</b>	<b>14</b>	<b>1908</b>	<b>16</b>	<b>1649</b>	<b>123</b>	<b>7295</b>	<b>16</b>	<b>1198</b>	<b>29</b>	<b>1898</b>	<b>1</b>	<b>53</b>	<b>69</b>

Source: Weekly Returns of Communicable Diseases (WRCD).

\*Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.

\*\*Timely refers to returns received on or before 27 December, 2008 Total number of reporting units =309. Number of reporting units data provided for the current week: 212

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