



# 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

Vol. 45 No. 49

01<sup>st</sup>– 07<sup>th</sup> December 2018

## Influenza-related deaths investigation – 2018, Southern Province Part V

### Antiviral treatment:

Mainly there were 3 antivirals namely Oseltamivir, Ribavirin and Acyclovir used for the treatment of these patients.

**Table 20: Distribution of cases according to categories of antiviral treatment given**

	Antiviral drug	No	%
1	Oseltamivir	20	100%
2	Ribavirin	9	45%
3	Acyclovir	3	15%

Oseltamivir was given for all patients and Ribavirin was given for 9 (45%) patients. Acyclovir was given as an antiviral treatment for 3 (15%) patients

### Oseltamivir treatment:

All these patients were treated with Oseltamivir in their course of illness. The number of days from onset of illness and the initiation of Oseltamivir is shown in the following table.

**Table 21: Time gap between the onset of symptoms to initiation of Oseltamivir**

No. of days from <u>onset of symptoms to initiation of Oseltamivir</u>	Days
Range	0 - 18 days
Mean duration	5.6 days
Median duration	4.5 days

Although these patients were treated with Oseltamivir, there is a significant delay in the initiation of Oseltamivir in the early stage of the disease in some cases. Mean days of starting Oseltamivir was 5.6 days from the onset of illness.

Table 22 depicts the time gap between admission to the hospital and the initiation of Oseltamivir.

**Table 22: Time gap between admission and initiation of Oseltamivir (Range, Mean, Median)**

No. of days from admission to initiation of <u>Oseltamivir</u>	Days
Range	0 - 18 days
Mean duration	2.85 days
Median duration	0.5 days

Mean duration of initiation of Oseltamivir was 2.85 days from admission to the hospital with a range of 0 -

18 days.

There were associated secondary infections among deceased children. Following are the associated secondary infections.

**Table 23: Distribution of cases according to bacterial & fungal findings**

Type of Infection	No	%
Klebsiella	5	25.0
Pseudomonas	3	15.0
Strep. Pneumonia	1	5.0
Coliforms	2	10.0
Serratia	1	5.0
Candida	4	20.0

Altogether there were 9 (45%) children who had a culture-positive bacterial or fungal infection. There was one patient with primary infection of Streptococcus pneumonia with positive blood culture in the early stage of the illness. Four cases gave positive results for candidiasis. This may be due to prolonged exposure to multiple broad-spectrum antibiotics

### Development of complications

All these patients were hospitalized and had stayed in the hospital for a considerable period. They have developed serious complications while in the ward. They are as follows.

**Table 24: Distribution of cases according to the presence of other complications**

Complication	No	%
Convulsions	11	55%
Pneumothorax	7	35%
Pleural Effusion	4	20%
Pneumo-peritoneum	1	5%

Eleven patients (55%) have developed convulsions. It may be due to part of illness or complication / adverse effects of treatments. Seven patients (35%) from the total and 50% from the ventilated patients had developed pneumothorax

### Duration of hospital stay

All these children were admitted to government hospitals. They have been in the hospital for a considerable period. Twelve patients had been admitted in the previous episode of illness with the same symptoms. The episode that led to death was analysed as follows.

**Table 25: Distribution of the number of days in the hospital up to death from the onset of illness and from the admission**

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	No. of days from onset of symptoms to Death	No. of days from admission to death
Range	7 -38 days	4 - 35 days
Mean	18.4 days	15.6 days
Median	15.5 days	12 days

The range of days of stay in the hospital before death was 7-38 days with a mean of 18.4 days. Duration from the onset of symptoms to death has been ranging from 4-35 days with a mean of 15.6 days.

**Causes of deaths**

Cause of death for almost all patients had been given as Pneumonia or Bronchopneumonia. Post Mortem had been conducted only on two patients. One pathological post mortem had been carried out for a neonate. However, the following causes of death had been given for the deceased children.

**Table 26: Distribution of causes of deaths among deceased children**

	Causes of death	No	%
1	Bronchopneumonia/ Bronchopneumonia with ARDS/ Atypical pneumonia/	11	55
2	Bronchopneumonia with Adenovirus infection	4	20
3	Bronchopneumonia with Influenza A and multi-organ failure	2	10
4	Bronchopneumonia, Congenital abnormalities and sepsis	2	10
5	Bilateral Pneumonia with CHD	1	5
	Total	20	100.0

Almost all patients have been recognized as Bronchopneumonia patients.

**General Observations**

- Patients were reported from all three districts of the Southern province and there was no obvious geographical clustering of cases.
- Nearly all parents have gone to a qualified doctor to get treatment within two days in the first episode of illness whereas in the second episode of illness majority have sought medical advice either from a consultant paediatrician or from the government hospital. Therefore, treatment seeking behaviour was up to the expected level among parents of deceased children.
- Fifty per cent of the patients have sought medical advice on the 1<sup>st</sup> day of occurrence of symptoms and no significant delay has been noticed regarding seeking of medical care.
- For Majority of the patients, 1<sup>st</sup> contact was a GP in the 1<sup>st</sup> episode of the illness and that was a Consultant in the private sector in the 2<sup>nd</sup> episode.
- The decision to admit the patient by the treating doctor has been delayed in some cases.
- Majority of the deceased children were between 6 months to one year of age. 75% of the deaths had occurred among infants.
- There was male predominance among the deceased.
- Majority of the patients had presented with cough and fever in both episodes of illness. In addition, some had loose stools. This clinical presentation was compatible with Influenza like illness (ILI).
- Nearly half of the deceased children had some form of severe co-morbidities.
- The majority had got admitted to hospitals for treatment within the first few days of illness.
- There was significant delay noticed in sending Virology samples from the affected children. This may have led to missing the diagnosis of the primary source of viral infection.
- In nearly 50% of cases, Virology had been done more than 3 days after treatment with Oseltamivir. There was a high possibility of index samples giving negative results and missing the opportunity to identify the primary source of infection.

- A significant number of cases had shown evidence of possible hospital-acquired infections.
- All the patients have been treated with multiple broad-spectrum antibiotics for a long duration.
- All have been treated with Oseltamivir but there was some delay observed in starting Oseltamivir in some cases in relation to the onset of the symptoms.
- Seventy per cent of children were treated and managed in the ICU setting. Few children were not able to be managed at ICU settings due to lack of facilities but those children also had received specialized care at ward settings.
- The majority (80%) of the cases had developed one or more complications (Convulsions, Pneumothorax, pleural effusion) during the management.
- Majority of the cases had prolonged hospital stay, average of 18 days.
- Out of 20, 13 had shown positive virology results. Six patients were positive for Influenza viral infection. Another 9 cases were positive for adenovirus infection and another 6 were positive for RSV. Among them, the majority were positive for more than one virus type.
- Majority of the samples which gave positive results for adenovirus were the ones sent with a significant delay (compared to the onset of the symptoms). In most cases, adenovirus infection may be due to secondary infection.
- Secondary bacterial infections of Klebsiella, Pseudomonas, Candida and Coliforms may be hospital-acquired infections while in the ward or P/ICU for a long period.
- Prolonged exposure to the multiple broad-spectrum antibiotics may have led to Candidemia in 4 children which are considered to have a very low prognosis.

**Recommendations:**

- Detailed individual case investigation reports of 20 deaths subjected to review by an independent team of multidisciplinary clinicians and came out with recommendations regarding the further strengthening of clinical management of children with respiratory tract infections.
- Need to explore the possible reasons for delaying of sending clinical samples for Virology and take necessary corrective measures.
- Need to take effective measures to implement National antibiotic policy at the institutional level.
- Need to strengthen institutional level infection control measures to prevent hospital-acquired infections.
- Need to explore the possibility of further expansion of ICU facilities.
- Lab facilities to perform Virology testing need to be expanded.
- Need to pay special care for proper documentation of the patient details in the BHT and preservation of investigation reports.
- Develop or modify clinical / laboratory guidelines specific to the index outbreak by the relevant experts at the early stage of the outbreak.

**Compiled by,**

**Dr. Chinth Jayasinghe  
Consultant Epidemiologist  
Epidemiology Unit  
Ministry of Health**

Table 1: Selected notifiable diseases reported by Medical Officers of Health 24<sup>th</sup>-30<sup>th</sup> Nove 2018(48<sup>th</sup> Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		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	277	8925	4	93	0	9	1	42	0	37	8	222	0	14	0	10	1	1	7	674	1	66	0	5	62	100
paha	174	5120	1	71	0	9	0	22	0	168	5	220	1	10	0	14	0	0	11	700	1	46	4	57	63	100
Kalutara	60	2805	2	89	0	5	0	15	1	61	28	639	0	6	0	15	0	0	21	680	3	103	0	9	55	100
Kandy	51	3493	3	115	0	7	1	5	2	28	8	112	5	105	0	23	0	1	7	314	2	42	3	37	59	100
Matale	10	846	0	23	0	1	1	6	0	42	3	99	0	4	0	10	0	0	0	56	1	17	3	167	60	100
NuwaraEliya	6	192	1	57	1	5	1	14	0	159	3	48	1	134	0	28	0	0	0	203	1	46	0	0	24	100
Galle	25	892	3	60	1	13	0	6	0	25	11	400	1	62	1	4	0	1	3	355	0	56	0	5	31	100
Hambantota	47	871	2	27	0	4	0	3	2	7	4	77	4	83	0	3	0	1	6	263	0	15	20	715	71	100
Matara	23	1007	1	41	0	6	0	9	0	23	16	261	2	61	3	21	0	0	8	282	0	14	10	466	55	100
Jaffna	127	3127	9	199	0	6	2	52	1	224	1	15	12	305	0	1	0	2	3	271	0	13	0	3	36	93
Kilinochchi	7	315	2	37	0	1	0	20	0	5	0	7	0	16	0	0	0	1	0	32	0	3	0	6	51	100
Mannar	3	202	0	26	0	0	0	3	0	2	0	1	0	12	0	0	0	0	0	28	0	4	0	3	36	100
Vavuniya	16	553	0	18	0	4	1	48	0	16	4	48	0	7	0	0	0	1	0	49	1	8	0	13	55	100
Mullaitivu	4	108	0	8	0	0	1	12	0	26	2	11	0	7	0	0	0	1	0	11	0	2	0	2	26	100
Batticaloa	58	4626	7	193	0	5	2	11	4	33	3	50	0	3	1	6	0	3	4	185	0	21	0	0	64	100
Ampara	11	233	1	79	0	5	0	3	0	11	7	50	0	0	0	7	0	1	6	286	2	31	0	3	64	100
Trincomalee	43	1039	1	41	0	2	0	6	1	15	1	58	1	23	0	4	0	0	1	197	0	10	0	20	30	100
Kurunegala	57	2268	5	143	0	17	2	16	0	13	44	323	4	27	0	23	0	2	14	578	1	84	11	435	61	100
Puttalam	85	1845	9	83	0	7	0	6	0	10	7	55	0	11	0	3	0	0	5	143	3	87	0	3	63	100
Anuradhapura	19	825	4	91	0	7	2	8	0	44	24	201	3	23	1	15	0	2	7	410	1	51	3	484	44	95
Polonnaruwa	7	291	0	45	0	5	0	0	0	20	14	132	0	1	0	4	0	1	10	295	1	22	3	240	56	88
Badulla	12	549	3	139	1	10	0	13	2	18	3	168	0	90	0	65	0	0	16	485	7	128	0	10	48	100
Monaragala	11	800	2	83	0	2	0	1	0	4	33	352	2	136	1	48	0	0	5	184	4	165	1	47	66	100
Ratnapura	42	2088	5	186	2	42	0	29	0	5	27	693	0	27	1	28	0	2	11	314	1	124	3	209	46	100
Kegalle	47	1397	2	59	0	13	3	11	0	93	14	328	0	75	1	17	0	0	11	405	0	47	0	14	64	100
Kalmune	31	1661	10	60	1	4	0	3	1	35	0	9	0	1	0	1	0	0	8	205	2	18	0	1	50	100
<b>SRI LANKA</b>	<b>1253</b>	<b>46078</b>	<b>77</b>	<b>2066</b>	<b>6</b>	<b>189</b>	<b>17</b>	<b>364</b>	<b>14</b>	<b>1124</b>	<b>27</b>	<b>4579</b>	<b>36</b>	<b>1243</b>	<b>9</b>	<b>350</b>	<b>1</b>	<b>20</b>	<b>164</b>	<b>7605</b>	<b>32</b>	<b>1223</b>	<b>61</b>	<b>2954</b>	<b>53</b>	<b>99</b>

Source: Weekly Returns of Communicable Diseases (WRCD).  
 \*T=Timeliness refers to returns received on or before 30<sup>th</sup> November, 2018 Total number of reporting units 353 Number of reporting units data provided for the current week: 349 C\*\*=Completeness  
 A = Cases reported during the current week. B = Cumulative cases for the year.

**Table 2: Vaccine-Preventable Diseases & AFP**

**24<sup>th</sup>–30<sup>th</sup> Nove 2018 (48<sup>th</sup> Week)**

Disease	No. of Cases by Province									Number of cases during current week in 2018	Number of cases during same week in 2017	Total number of cases to date in 2018	Total number of cases to date in 2017	Difference between the number of cases to date in 2018 & 2017
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	01	60	66	- 9 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	02	00	02	02	00	00	01	00	00	07	02	338	284	19 %
Measles	01	00	00	00	00	01	00	00	00	02	00	114	188	- 39.3 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	08	10	- 20 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	01	0%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	19	16	18.7 %
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	25	26	- 3.8 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	03	47	22	113.6 %
Tuberculosis	47	14	15	01	10	08	20	02	00	117	95	8113	7755	4.6 %

**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@slt.net.lk](mailto:chepid@slt.net.lk). **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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**Dr. S.A.R. Dissanayake**  
 CHIEF EPIDEMIOLOGIST  
 EPIDEMIOLOGY UNIT  
 231, DE SARAM PLACE  
 COLOMBO 10