



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
Ministry of Health, Nutrition & Indigenous Medicine

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Lightning injuries Part II

This is the second in the series of two articles on [lightning injuries](#).

Effects of lightning

Lightning provides our daily need for the element nitrogen through the food chain. The excessive electrical energy of lightning converts nitrogen into nitrate. Then nitrate falls on the ground with rainwater and is absorbed by trees. Despite this important effect, lightning could damage many organs or systems in the body including most serious damage to the cardiovascular and central nervous systems.

Sudden death may occur due to lightning due to cardiorespiratory arrest. Circulatory collapse is common with direct hits of lightning. Both fluctuations of blood pressure and autonomic instability are possible outcomes after lightning. Other adverse effects include cardiomyopathy, atrial fibrillation, and pericarditis. Those above effects may resolve within three days except for pericarditis. Pericarditis usually may persist several months after the initial injury.

Injuries to the nervous system include loss of consciousness, seizure, headache, paraesthesia or weakness, confusion and memory loss. They are transient and permanent neurological symptoms including peripheral nerve lesions and cerebral in-

farction. Progressive myelopathy and sensory loss can also occur several months after the initial injury. Lightning can lead to partial or full thickness burns. It is believed that the place of skin where the lightning current exits from the body becomes a burn.

Ocular injuries are also common and the lens is the most frequently injured part of the eye. Cataracts may be the commonly observed complication among victims after a few days or sometimes after a few years. Rupturing of the tympanic membrane can also occur. Deafness is common but usually, it is transient. Most frequently arising psychiatric problems are depression, sleep disturbances, emotional impairment and aggressive behaviour. Memory loss and poor concentration ability can also be noticed.

Buildings or tall structures struck by lightning may be damaged as the lightning seeks an unintentional trail to the ground. Animals are more susceptible victims to being affected by lightning as they are generally placed outdoors even in heavy rains. Prevention and protection from lightning injuries

The followings are some recommendations to help to reduce the effects of lightning in an indoor and outdoor environment.

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Preventive measures for the outdoor settings

- Avoid being outside in open spaces during thunderstorms. If you hear thunder, you are in the range of a lightning strike. You need to seek shelter immediately if you are outside. E.g. Inside a building or a closed vehicle.
- Do not stand underneath the highest elevation areas and tall objects. Always move away from signal towers and isolated trees.
- Do not carry or hold tall metal objects during thunderstorms.
- If lightning has struck the immediate area, remember that lightning can strike the same place twice.
- Avoid a water environment. Do not bathe in an open pool and do not row a boat during lightning.
 - If you cannot find shelter, crouch down in a catcher's stance. Put your hands on your knees or place them over your ears to protect against hearing damage from thunder.

Preventive measures for the indoor settings

- Close all windows and stay away from them.
- Do not use any electrical or electronic equipment. Lightning may strike outside lines and travel inside.
 - Do not use land-line telephones.

Protection from lightning injuries**Historical background of lightning protection system**

In 1752 Benjamin Franklin performed the famous experiment of flying kite up to a thunder cloud and proved that a lightning strike was a discharge of a huge amount of electricity. He invented the lightning rod and his first theory was that the sharp pointed metal rod on a building would provide a safe path for lightning. Also, most ancient lightning conductors can be found in Sri Lanka in places like the Anuradhapura kingdom that date back thousands of years. Most Sinhalese kings, who mastered the art of construction of temples and advanced building structures, installed a metal tip made of silver or copper on the highest point of those buildings.

Lightning protection system

Lightning protection can improve security from lightning strikes by decreasing the likelihood and strength of indoor lightning shocks. It provides a specified path on which lightning can travel to the ground. The lightning protection system connected to the building includes a network of the lightning rod (air terminal), braided conductor (cable) and ground termination. A lightning rod is a metal strip, connected to the earth through conductors. Lightning arresters, which are fixed to the electric power transmission systems and telecommunication towers, are helping to protect those systems. Alertness on weather forecast High winds, increased rainfall and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. Therefore, being alert to local weather patterns and the current weather forecast is the essential first step to preventing being struck by lightning. First aid measures if lightning strikes a human Lightning hazards are not fatal at all times and there is no risk in touching the victim unless the person falls on electric cables. The damage is determined by the path of the discharge of lightning through the body and the intensity of the current. It is essential to provide first aid measures immediately after the incident to save a life before seeking medical treatment for the victim. Providing cardiopulmonary resuscitation is a must if it is disturbed.

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Epidemiology Unit

Ministry of Health

Table 1: Selected notifiable diseases reported by Medical Officers of Health 22nd- 28th Jan 2022 (04th 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	20	1295	1	2	0	0	0	0	0	3	0	8	0	0	0	0	0	0	0	0	3	0	0	0	1	1	100
Gampaha	17	1259	0	0	0	0	0	0	0	0	2	10	0	0	0	0	0	0	0	0	2	0	2	0	0	0	72
Kalutara	64	329	1	3	0	0	0	0	0	0	9	33	1	1	1	1	0	0	0	0	6	1	3	0	0	0	100
Kandy	66	298	1	3	0	0	0	0	0	0	3	14	1	2	0	3	0	0	0	0	5	0	0	0	0	1	97
Matale	13	55	0	0	0	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0	1	0	0	4	36	4	100
NuwaraEliya	5	25	2	3	0	0	0	0	0	0	1	4	2	2	0	0	0	0	0	0	0	0	0	0	0	8	100
Galle	76	299	0	0	0	0	0	0	0	0	6	52	0	3	0	0	0	0	0	1	3	1	3	0	0	0	100
Hambantota	28	104	1	5	0	0	0	0	0	0	2	14	0	3	0	1	0	0	0	0	0	1	1	10	52	2	100
Matara	29	92	0	1	0	0	0	0	0	0	5	15	0	0	0	0	0	0	0	0	2	0	1	0	26	3	100
Jaftna	11	405	1	2	1	1	2	13	0	4	0	7	18	111	2	2	0	0	0	1	14	2	2	0	0	29	88
Kilinochchi	7	24	0	1	0	0	0	0	5	6	0	1	0	3	0	0	0	0	0	0	0	0	0	0	1	19	100
Mannar	29	110	0	1	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	4	0	0	29	85
Vavuniya	8	21	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	100
Mullaitivu	2	12	0	0	0	0	0	2	0	0	1	5	0	1	0	0	0	0	0	0	1	0	0	0	0	13	100
Batticaloa	11	106	1	9	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	1	5	0	0	25	100
Ampara	5	31	0	2	0	0	0	0	0	0	2	14	0	1	0	0	0	0	0	0	7	0	3	2	2	11	100
Trincomalee	21	110	0	1	0	0	0	1	0	0	2	3	0	0	0	4	0	0	0	0	0	0	2	0	0	18	92
Kurunegala	11	640	1	2	0	1	0	0	0	0	2	16	0	6	0	0	0	0	0	1	4	0	2	4	57	0	100
Puttalam	88	435	0	0	0	0	0	0	0	0	5	5	0	1	0	0	0	0	0	0	0	3	6	1	1	10	92
Anuradhapur	14	59	0	0	0	0	0	0	0	0	6	34	1	2	0	1	0	1	0	1	0	2	20	56	0	92	
Polonnaruwa	6	26	0	1	0	0	0	0	0	1	8	27	0	0	0	0	0	0	0	0	0	1	1	5	26	0	88
Badulla	63	251	0	4	0	0	0	0	0	0	5	29	2	5	1	11	0	0	0	1	3	0	1	1	3	0	100
Monaragala	11	37	0	0	0	0	1	2	0	1	10	50	0	3	0	5	0	0	0	2	0	6	3	10	0	0	100
Ratnapura	49	244	4	8	0	2	0	1	3	14	19	108	0	2	3	4	0	0	0	2	0	0	11	20	0	0	95
Kegalle	65	196	0	1	0	0	0	1	0	3	12	70	0	1	0	0	0	0	0	3	6	0	4	0	2	0	100
Kalmune	7	34	2	11	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	21	100
SRI LANKA	12	6497	15	60	1	5	3	20	8	32	99	535	25	147	7	32	0	1	8	64	10	49	61	293	6	95	

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 28th Jan , 2022 Total number of reporting units 361 Number of reporting units data provided for the current week: 345 C**=Completeness

Table 2: Vaccine-Preventable Diseases & AFP

22nd – 28th Jan 2022 (04th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2022	Number of cases during same week in 2021	Total number of cases to date in 2022	Total number of cases to date in 2021	Difference between the number of cases to date in 2022 & 2021
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	01	00	00	00	00	00	00	00	02	02	06	04	50 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	00	01	00	00	00	00	01	02	04	06	- 33.3 %
Measles	00	00	00	00	00	00	00	00	00	00	01	01	03	- 66.6 %
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	01	00	0 %
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	01	00	0 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tuberculosis	37	03	07	06	05	09	16	12	14	109	217	385	522	- 26.2 %

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@slt.net.lk. **Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

ON STATE SERVICE

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