



# WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit  
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## Botulism Part I

This is the first of two articles

Overview Human botulism is a serious, potentially fatal disease caused by *Clostridium botulinum*, which produces spores that are heat-resistant and exist widely in the environment, and in the absence of oxygen they germinate, grow, and then excrete toxins. There are seven distinct forms of botulinum toxin, types A–G. Four of these (types A, B, E and rarely F) cause human botulism. Botulinum toxins are ingested through improperly processed food in which the bacteria or the spores survive and produce the toxins. Though mainly a foodborne intoxication, botulism can also be caused by intestinal infection in infants, wound infections and by inhalation.

### Symptoms

Early symptoms are marked fatigue, weakness, and vertigo, usually followed by blurred vision, dry mouth and difficulty in swallowing and speaking. Vomiting, diarrhoea, constipation, and abdominal swelling may also occur. The disease can progress to weakness in the neck and arms, after which the respiratory muscles and muscles of the lower body are affected. The paralysis may make breathing difficult.

There is no fever and no loss of consciousness. The symptoms are not caused by the bacterium itself, but by the toxin produced by the bacterium. Symptoms usually appear within 12 to 36 hours (within a minimum and maximum range of four hours to eight days) after exposure. Incidence of botulism is low, but the mortality rate can be high. The disease can be fatal in 5 to 10% of cases.

### Foodborne botulism

*Clostridium botulinum* is an anaerobic bacterium, meaning it can only grow in the absence of oxygen. Foodborne botulism occurs when *Clostridium botulinum* grows and produces toxins in food prior to consumption. *Clostridium botulinum* produces spores, and they exist widely in the environment including soil, river, and sea water. The botulinum toxin has been found in a variety of foods, including low-acid preserved vegetables, such as green beans, spinach, mushrooms, and beets; fish, including canned tuna, fermented, salted, and smoked fish; and meat products, such as ham and sausage. Occasionally, commercially prepared foods are involved. Though spores of *Clostridium botulinum* are heat-resistant, the toxin produced by

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bacteria growing out of the spores under anaerobic conditions is destroyed by boiling (for example, at internal temperature >85°C for five minutes or longer). Food samples associated with suspect cases must be obtained immediately, stored in properly sealed containers, and sent to laboratories to identify the cause and to prevent further cases.

**Infant botulism**

Infant botulism occurs mostly in infants under six months of age. Different from foodborne botulism caused by ingestion of pre-formed toxins in food, it occurs when infants ingest *Clostridium botulinum* spores, which germinate into bacteria that colonize in the gut and release toxins.

**Wound botulism**

Wound botulism is rare and occurs when the spores get into an open wound and can reproduce in an anaerobic environment.

**Inhalation botulism**

Inhalation botulism is rare and does not occur naturally, i.e., it is associated with accidental or intentional (e.g., bioterrorism) events which result in release of the toxins in aerosols. Inhalation botulism exhibits a similar clinical footprint to foodborne botulism. The median lethal dose for humans has been estimated at two nanograms of botulinum toxin per kilogram of bodyweight, which is approximately three times greater than in foodborne cases.

**Other types of intoxication**

Waterborne botulism could theoretically result from the ingestion of the pre-formed toxin. However, as common water treatment processes (e.g., boiling, disinfection with 0.1% hypochlorite bleach solution) destroy the toxin, the risk is considered low. Botulism of undetermined origin usually involves adult cases where no food or wound source can be identified.

**Compiled by**

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**Table 1 : Water Quality Surveillance  
Number of microbiological water samples August 2021**

District	MOH areas	No: Expected *	No: Received
Colombo	15	90	NR
Gampaha	15	90	NR
Kalutara	12	72	NR
Kalutara NIHS	2	12	NR
Kandy	23	138	NR
Matale	13	78	NR
Nuwara Eliya	13	78	NR
Galle	20	120	NR
Matara	17	102	NR
Hambantota	12	72	8
Jaffna	12	72	NR
Kilinochchi	4	24	0
Manner	5	30	0
Vavuniya	4	24	NR
Mullatvu	5	30	NR
Batticaloa	14	84	NR
Ampara	7	42	NR
Trincomalee	11	66	NR
Kurunegala	29	174	NR
Puttalam	13	78	NR
Anuradhapura	19	114	NR
Polonnaruwa	7	42	0
Badulla	16	96	NR
Moneragala	11	66	NR
Rathnapura	18	108	NR
Kegalle	11	66	0
Kalmunai	13	78	NR

\* No of samples expected (6 / MOH area / Month)  
NR = Return not received

Table 1: Selected notifiable diseases reported by Medical Officers of Health 11th-17th Sep 2021 (38th 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	59	3529	0	10	0	1	0	4	0	3	5	143	0	1	0	2	0	2	0	22	0	9	0	1	45	100
Gampaha	50	1817	1	2	1	5	0	1	0	0	5	168	0	5	0	4	0	5	1	21	0	12	0	12	22	75
Kalutara	29	1019	0	11	0	2	0	3	0	0	31	416	0	3	0	1	1	1	1	67	0	17	0	0	34	200
Kandy	7	553	0	18	0	1	0	3	0	2	5	111	2	34	0	1	0	0	0	33	0	15	0	21	58	100
Matale	5	159	0	12	0	4	0	0	0	0	1	66	0	5	0	1	0	0	0	12	1	6	0	182	52	100
NuwaraEliya	2	40	0	11	0	2	0	2	0	0	1	48	1	36	0	4	0	0	0	25	0	7	0	1	28	100
Galle	11	293	1	7	0	1	0	5	0	5	19	543	1	24	0	2	0	0	3	51	1	28	0	1	38	100
Hambantota	6	279	2	11	0	2	0	2	1	5	6	216	5	66	0	7	0	0	1	44	1	33	14	395	70	100
Matara	7	411	0	3	0	1	0	1	0	0	11	214	0	17	0	2	0	0	2	52	0	10	3	217	42	100
Jaffna	0	123	0	40	0	3	0	15	0	27	0	17	0	438	0	0	1	5	0	28	0	3	0	2	23	88
Kilinochchi	0	25	0	23	0	0	0	2	0	10	0	54	1	77	0	0	0	0	0	10	0	0	0	1	52	100
Mannar	0	25	1	5	0	0	0	4	0	0	0	27	0	2	0	0	0	0	0	3	2	19	0	1	37	100
Vavuniya	0	35	0	2	0	1	0	1	0	1	0	23	0	2	0	1	0	0	0	6	0	1	0	1	36	100
Mullaitivu	0	5	0	3	0	0	0	0	0	1	0	32	0	8	0	0	0	0	0	9	0	6	0	0	21	100
Batticaloa	0	2996	1	30	0	4	0	2	0	16	0	39	0	0	0	1	0	0	0	12	1	23	0	0	46	100
Ampara	0	35	0	7	0	0	0	1	0	7	1	53	0	1	0	2	0	0	0	39	0	13	0	9	59	100
Trincomalee	0	124	0	0	0	0	0	0	0	2	0	4	0	0	0	2	0	0	0	16	0	2	0	0	26	100
Kurunegala	9	893	0	18	0	4	0	0	0	3	2	242	0	25	0	3	0	2	0	43	1	78	5	288	37	100
Puttalam	0	288	0	2	0	1	0	0	0	0	0	22	0	15	0	1	0	1	1	17	1	33	0	9	40	97
Anuradhapur	4	188	0	10	0	0	0	1	0	3	1	220	0	24	0	4	0	0	0	31	2	34	13	208	25	91
Polonnaruwa	2	65	0	3	0	1	0	3	0	9	1	107	0	3	0	3	0	0	0	26	0	2	1	339	38	100
Badulla	3	197	0	9	0	0	0	1	0	0	2	275	0	39	0	31	0	0	1	35	0	16	1	18	43	100
Monaragala	0	104	0	6	0	0	0	3	0	5	1	311	0	29	0	68	0	0	0	24	0	49	0	29	50	100
Ratnapura	8	424	0	26	0	6	0	0	0	5	14	616	1	19	0	8	0	1	3	48	1	67	6	102	34	95
Kegalle	1	363	0	4	0	11	0	0	0	2	2	221	0	11	0	1	0	0	0	79	1	25	0	15	39	100
Kalmune	0	269	0	13	0	2	0	1	0	1	0	17	0	1	0	2	0	2	1	15	1	11	0	2	45	100
<b>SRILANKA</b>	<b>20</b>	<b>14259</b>	<b>6</b>	<b>286</b>	<b>1</b>	<b>52</b>	<b>0</b>	<b>55</b>	<b>1</b>	<b>107</b>	<b>10</b>	<b>4205</b>	<b>11</b>	<b>885</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>19</b>	<b>14</b>	<b>768</b>	<b>13</b>	<b>519</b>	<b>43</b>	<b>1854</b>	<b>40</b>	<b>97</b>

Source: Weekly Returns of Communicable Diseases (esurveillance.epid.gov.lk). T=Timeliness refers to returns received on or before 17th Sep., 2021 Total number of reporting units 361 Number of reporting units data provided for the current week: 351 C\*\*=Completeness 41

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

11<sup>th</sup>-17<sup>th</sup> Sep 2021 (38<sup>th</sup> Week)

Disease	No. of Cases by Province									Number of cases during current week in 2021	Number of cases during same week in 2020	Total number of cases to date in 2021	Total number of cases to date in 2020	Difference between the number of cases to date in 2021& 2020
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	01	01	00	00	00	00	00	02	02	48	33	45.4 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	00	00	00	00	00	00	00	00	00	00	07	58	141	- 58.8 %
Measles	00	00	00	00	00	00	00	00	00	00	00	11	41	- 73.1 %
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	02	03	- 33.33%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	00	00	00	01	00	00	00	00	00	01	00	04	31	- 87 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	00	07	- 100%
Tuberculosis	38	00	00	03	11	00	00	12	19	83	192	3708	4717	- 21.3 %

**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

Influenza Surveillance in Sentinel Hospitals - ILI & SARI							
Month	Human				Animal		
	No Total	No Positive	Infl A	Infl B	Pooled samples	Serum Samples	Positives
March							

Source: Medical Research Institute & Veterinary Research Institute

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**

**ON STATE SERVICE**

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