



WEEKLY EPIDEMIOLOGICAL REPORT

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Climate Change and the Rise of Food-Borne Diseases - Part I

*This is the first article of two in a series on
“Climate Change and the Rise of Food-Borne
Diseases”*

Climate change is one of the most serious global problems. It affects the air we breathe, the water we drink, the food we eat, and even the diseases we face. While much attention is often given to rising sea levels, melting ice, or extreme weather, one of the less-discussed but equally important issues is how climate change increases the risk of food-borne diseases.

Food-borne diseases happen when people eat or drink food and water contaminated with harmful germs. These germs include bacteria, viruses, parasites, and even toxins made by fungi. They can cause mild abdominal pains or severe, sometimes deadly, illnesses. The World Health Organisation (WHO) estimates that every year, about one in ten people in the world becomes sick from contaminated food. This equals around 600 million illnesses and 420,000 deaths globally (WHO, 2022a).

Climate change is making this situation worse. Warmer temperatures, unpredictable rainfall, droughts, floods, and warming oceans are creating perfect conditions for germs to spread. Farming, fishing, water supply, and food storage systems are also affected. All these changes increase the chances of food becoming unsafe. Understanding this link is very important because it can help countries prepare, protect people's health, and build safer food systems for the future.

Weather and climate play a major role in the survival and spread of germs that cause food-borne diseases. Here are some ways this happens:

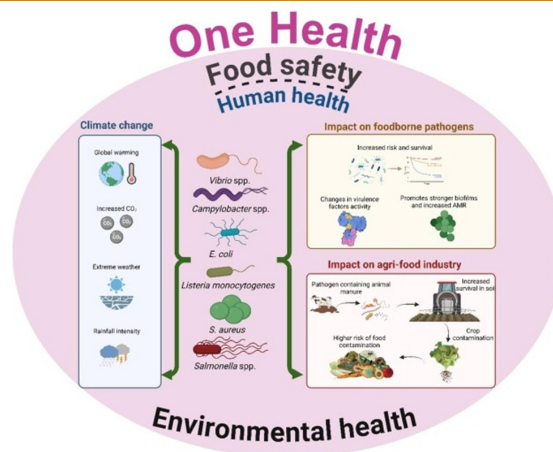
- Higher temperatures: Warm weather helps bacteria grow faster. Food that is not stored properly spoils more quickly, and germs multiply at dangerous levels.
- Heavy rainfall and floods: Water often gets mixed with sewage or animal waste, contaminating drinking water, crops, and food.
- Droughts: When safe water is not available, people are forced to use unsafe sources, increasing the risk of infection.
- Extreme weather: Storms, hurricanes, and heatwaves can damage food storage and transport systems, making contamination more likely.
- Warming oceans: Rising sea temperatures allow harmful bacteria like *Vibrio* to grow in new coastal areas, causing diseases such as cholera.

These changes not only affect germs directly but also influence farming practices, fishing, trade, and even consumer habits. Together, these factors create more pathways for food contamination.

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Picture credit goes to: The One Health aspect of climate events with impact on foodborne pathogens transmission.

This figure illustrates how altered environmental conditions impact foodborne diseases. This review explores the complex interplay between climate change, specific pollutants such as antibiotics, microplastics, and heavy metals and the transmission of bacterial pathogens and antimicrobial resistance (AMR) within the food chain. By examining the effects of major environmental factors, including water (rain, floods, storms), air (hurricanes, cyclones, dust), temperature, and humidity, the review aims to understand how these climatic changes facilitate the spread of zoonotic pathogens such as *Salmonella*, *E. coli*, *Campylobacter*, *Vibrio*, *Listeria*, and *Staphylococcus aureus*.

Foodborne Bacteria and Climate Change: *Salmonella*

Salmonella is one of the most common bacteria that causes food poisoning. It is usually found in contaminated eggs, poultry, meat, and sometimes vegetables. Warmer weather makes *Salmonella* grow faster and live longer. Areas that used to be too cold for the bacteria are now becoming suitable, which means more people are at risk.

Studies have shown that heatwaves and heavy rainfall often lead to spikes in salmonellosis cases. For example, during very hot summers in Europe and North America, the number of cases rises sharply. In tropical and subtropical regions, salmonellosis is even more common because warm and humid conditions are ideal for bacterial growth.

Campylobacter:

Campylobacter is another important bacterium that causes diarrhoea and stomach pain. It is usually spread through contaminated food or water. WHO estimates that 5.5 million people fall sick with *Campylobacter* infections every year, and up to 180,000 die from it.

The spread of *Campylobacter* is closely linked to temperature. Warmer weather several weeks before an outbreak often predicts when more cases will occur. This shows that climate conditions strongly influence the timing and severity of infections.

Clostridium perfringens

This bacterium causes food poisoning and intestinal problems. Symptoms include diarrhoea, stomach cramps, and dehydration. It produces toxins that damage the gut. Climate change increases the risk of outbreaks because hotter temperatures make it harder to keep food at safe storage conditions, especially in places with poor refrigeration.

Staphylococcus aureus:

Staphylococcus aureus causes skin infections and food poisoning. Its growth depends on environmental factors such as temperature, salt, sugar, and acidity. Climate change alters these conditions, allowing the bacteria to grow in new places and produce toxins that make food unsafe.

Escherichia coli (*E. coli*):

Most *E. coli* bacteria are harmless, but some strains cause serious stomach illness and even kidney problems. Their survival is influenced by temperature and water conditions. Flooding and agricultural runoff caused by heavy rains can spread *E. coli* into crops and water sources. This is especially dangerous in regions with poor sanitation systems.

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References:

1. Climatic Change (2024) 177:92
<https://doi.org/10.1007/s10584-024-03748-9>
2. <https://climate-adapt.eea.europa.eu/en/observatory/evidence/health-effects/food-borne-illness#mycotoxins>
3. <https://www.who.int/health-topics/foodborne-diseases#>
4. <https://www.who.int/news-room/fact-sheets/detail/food-safety>

Table 1: Selected notifiable diseases reported by Medical Officers of Health 02nd-08th Aug 2025 (32nd Week)

RDHS	Dengue Fever		Dysentery		Encephalitis		En. Fever		F. Poisoning		Leptospirosis		Typhus F.		Viral Hep.		H. Rabies		Chickenpox		Meningitis		Leishmania-		Tuberculosis		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	A	B	T*	C**
Colombo	156	8176	4	24	4	10	1	10	2	32	4	305	0	5	0	13	0	0	27	378	7	49	0	3	52	1267	100	100
Gampaha	96	5311	2	32	0	25	0	1	0	126	14	521	0	9	1	14	0	0	8	558	5	108	0	28	14	724	93	100
Kalutara	47	1699	0	28	0	6	3	17	2	45	2	427	1	3	0	5	0	0	16	589	0	33	0	1	0	362	93	99%
Kandy	145	3054	0	38	0	3	0	6	7	29	3	201	2	40	0	7	0	0	11	359	0	18	0	45	8	414	96	100
Matale	17	883	0	19	0	2	0	0	0	50	4	172	0	4	1	8	0	0	5	90	0	7	9	197	5	100	100	100
Nuwara Eliya	10	237	1	63	1	6	0	4	7	57	10	102	0	46	0	1	0	0	11	191	0	23	0	0	9	178	92	100
Galle	37	1444	1	31	1	4	0	5	4	53	14	557	1	58	0	8	0	1	16	518	2	113	0	3	12	314	95	100
Hambantota	17	661	1	24	0	5	0	0	0	4	5	280	3	25	0	10	0	0	6	231	0	18	3	197	5	107	100	100
Matara	20	1149	0	12	0	2	0	1	0	11	2	333	0	12	0	12	0	0	6	269	1	30	2	71	12	113	100	100
Jaffna	9	878	2	66	0	2	0	11	2	41	1	126	1	396	0	2	0	2	1	252	1	21	0	0	8	145	93	93%
Kilinochchi	0	70	0	13	0	1	0	4	0	5	0	62	0	11	0	1	0	0	0	4	0	0	0	2	35	100	100	100
Mannar	3	126	0	5	0	0	0	0	0	2	1	23	0	14	1	1	0	0	0	17	0	13	1	5	0	39	80	100
Vavuniya	0	65	0	9	0	0	0	1	0	38	2	71	0	8	0	0	0	0	1	36	1	17	0	15	0	40	100	100
Mullaitivu	0	48	0	5	0	0	0	1	0	23	0	53	0	9	0	0	0	0	0	29	0	5	0	3	0	21	100	100
Batticaloa	12	1520	0	104	0	14	1	2	4	156	1	86	0	2	0	20	0	0	0	140	0	25	0	1	1	92	86	100
Ampara	0	189	1	37	1	11	0	0	0	17	5	168	0	3	0	8	0	1	5	151	2	35	1	21	4	40	100	100
Trincomalee	4	889	0	35	0	2	0	1	0	71	1	116	0	9	0	5	0	0	8	95	0	11	0	5	0	85	100	100
Kurunegala	37	1221	0	36	1	14	0	1	0	47	8	533	0	23	0	6	0	1	15	574	2	114	9	394	8	224	97	100
Puttalam	17	481	1	23	0	3	0	0	0	5	2	201	1	32	0	1	0	1	4	115	2	66	2	24	6	135	100	100
Anuradhapura	6	424	0	26	0	6	0	3	1	28	0	300	0	21	0	12	0	0	4	226	1	48	14	503	12	207	74	100
Polonnaruwa	2	263	0	13	1	6	0	1	0	8	4	219	0	1	0	18	0	0	4	131	0	16	4	283	1	62	100	90%
Badulla	13	579	0	22	1	9	0	3	0	6	2	213	0	21	2	47	0	0	8	283	1	51	0	39	6	196	88	100
Monaragala	11	626	3	20	0	3	0	0	0	4	6	434	1	29	3	27	0	0	3	119	1	38	6	139	6	95	100	100
Ratnapura	64	3603	0	82	0	6	0	3	4	54	19	1047	2	24	0	11	0	1	7	312	1	81	4	134	7	273	100	100
Kegalle	31	1085	0	48	0	12	0	9	0	32	11	524	3	13	0	15	0	0	7	596	0	77	0	22	3	180	91	100
Kalmunai	3	305	2	27	0	6	0	0	0	18	3	82	0	1	0	3	0	1	7	123	1	37	0	0	4	88	100	100
SRILANKA	757	34986	18	842	10	158	5	84	33	962	124	7156	15	819	8	255	0	8	180	6386	28	1054	55	2135	185	5536	95	99

Source: Weekly Returns of Communicable Diseases (surveillance.avid.gov.lk). T=Timeliness refers to returns received on or before 15th Aug, 2025 Total number of reporting units 360 Number of reporting units data provided for the current week: 359. C**=Completeness. A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

02nd – 08th Aug 2025 (32nd Week)

Disease	No. of Cases by Province									Number of cases during current week in 2025	Number of cases during same week in 2024	Total number of cases to date in 2025	Total number of cases to date in 2024	Difference between the number of cases to date in 2025 & 2024
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	00	00	00	00	0	00	00	01	02	01	39	43	-9.3%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	02	00	00	00	01	00	01	01	05	04	160	179	-10.6 %
Measles	00	00	00	00	00	00	00	00	00	00	14	01	247	-99.5%
Rubella	00	00	00	00	00	00	00	00	00	00	00	04	02	-100%
CRS**	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	05	05	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	04	06	33.3 %
Whooping Cough	02	00	00	00	00	00	00	00	00	02	02	17	39	-56.4 %

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

Take prophylaxis medications for leptospirosis during the paddy cultivation and harvesting seasons.

It is provided free by the MOH office / Public Health Inspectors.

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

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