



# WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit  
Ministry of Health

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## Diarrhoeal disease-The child killer

Diarrhoeal disease is the second leading cause of death in children under five years of age, and is responsible for killing 1.5 million children every year. Diarrhoea can last several days, and can leave the body without water and salts that are necessary for survival. Most people who die from diarrhoea actually die from severe dehydration and fluid loss. Children who are malnourished or have impaired immunity are most at risk of life threatening diarrhoea.

Diarrhoea is defined as the passage of three or more loose or liquid stools per day (or more frequent passage than is normal for the individual). Frequent passing of formed stools is not diarrhoea, nor is the passing of loose, "pasty" stools by breastfed babies. Diarrhoea is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms.

There are three clinical types of diarrhoea:

- Acute watery diarrhoea – lasts several hours or days, and includes cholera
- Acute bloody diarrhoea – also called dysentery
- Persistent diarrhoea – lasts 14 days or longer.

### Burden of Diarrhoeal disease

Diarrhoeal disease is a leading cause of child mortality and morbidity in the world and mostly results from contaminated food and water sources. Globally, around 1 billion people lack access to improved water and 2.5 billion have no access to basic sanitation. Diarrhoea due to infection is widespread throughout developing countries. In 2004, diarrhoeal disease was the third leading cause of death in low income coun-

tries, causing 6.9% of deaths overall. In children under five years, diarrhoeal disease is the second leading cause of death, second only to pneumonia. In developing countries, children under three years experience on average three episodes of diarrhoea every year. Each episode deprives the child of the nutrition necessary for growth. As a result, diarrhoea is a major cause of malnutrition, and malnourished children are more likely to fall ill from diarrhoea.

### Causes

**Infections:** Mainly diarrhoea is a symptom of infections caused by a host of bacterial, viral and parasitic organisms. Bacteria such as Escherichia coli (E. coli), Campylobacter, Salmonella and Shigella; viruses such as rotavirus, norovirus, cytomegalovirus, herpes simplex virus, and viral hepatitis; and parasites such as Parasites Giardia lamblia, Entamoeba histolytica, and Cryptosporidium are common causes of diarrhoea. Rotavirus and Escherichia coli are the two most common causes of diarrhoea in developing countries.

**Other causes:** Food poisoning, Functional bowel disorders (e. g. irritable bowel syndrome), Inflammatory bowel diseases (e.g. Ulcerative colitis, Crohn's disease), Food intolerances and sensitivities (e.g. lactose intolerance) and Reaction to medicines (e.g. Antibiotic induced diarrhoea etc) are the other common causes of diarrhoea

### Mode of transmission

Water contaminated with human/animal faeces, for example, from sewage, septic tanks and latrines is of particular concern.

Food is another major cause of diarrhoea when it is prepared or stored in unhygienic conditions. Polluted water also can contaminate food during irrigation. Fish and seafood from polluted water may also contribute to the disease.

Diarrhoeal disease can also spread from person to person, aggravated by poor personal hygiene.

### Complications of Diarrhoeal disease

**Dehydration**-The most severe threat posed by diarrhoea is dehydration. During a diarrhoeal episode, water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools and vomit. Dehydration occurs when these losses are not replaced.

### Key facts

- Diarrhoeal disease is the second leading cause of death in children under five years of age. It is both preventable and treatable.
- Diarrhoeal disease kills 1.5 million children every year.
- Globally, there are about two billion cases of diarrhoeal disease every year.
- Diarrhoeal disease mainly affects children under two years old.
- Diarrhoea is a leading cause of malnutrition in children under five years of age.

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The degree of dehydration is rated as follows.

- Minimal dehydration – No signs or symptoms.
- Moderate dehydration: Thirst, restless or irritable behaviour, decreased skin elasticity, sunken eyes
- Severe dehydration: Symptoms become more severe-Shock, with diminished consciousness, lack of urine output, cool, moist extremities, a rapid and feeble pulse, low or undetectable blood pressure and pale skin.

Death can follow severe dehydration if body fluids and electrolytes are not replenished, either through the use of oral rehydration salts (ORS) solution, or through an intravenous drip.

Malnutrition: Children who die from diarrhoea often suffer from underlying malnutrition, which makes them more vulnerable to diarrhoea. Each diarrhoeal episode, in turn, makes their malnutrition even worse. Diarrhoea is a leading cause of malnutrition in children under five years of age.

**Treatment**

Key measures to treat diarrhoea include the following.

Rehydration: Replenishment of lost fluids with intravenous fluids in

case of severe dehydration or shock and/or oral rehydration salts (ORS) solution for moderate or no dehydration. ORS is a mixture of clean water, salt and sugar, which can be prepared safely at home. ORS is absorbed in the small intestine and replaces the water and electrolytes lost in the faeces.

Zinc supplements: Zinc supplements reduce the duration of a diarrhoea episode by 25% and are associated with a 30% reduction in stool volume.

Preventing and treating malnutrition-The vicious circle of malnutrition and diarrhoea can be broken by continuing to give nutrient rich foods including breast milk during a diarrhoeal episode, and by giving a nutritious diet including exclusive breastfeeding for the first six months of life. Restriction of food during a diarrhoeal episode should never be done. Such actions would aggravate the existing condition.

**Prevention**

Key measures to prevent diarrhoea include: provision of safe drinking-water, improved sanitation, exclusive breastfeeding for the first six months of life, good personal and food hygiene, health education about how infections spreads.

<p><b>Five keys to safer food</b></p> <p><b>Keep Clean</b></p> <ul style="list-style-type: none"> <li>• Wash your hands before handling food and often during food preparation</li> <li>• Wash your hands after going to the toilet</li> <li>• Wash and sanitize all surfaces and equipment used for food preparation</li> <li>• Protect kitchen areas and food from insects, pests and other animals</li> </ul> <p><b>2. Separate raw and cooked</b></p> <ul style="list-style-type: none"> <li>• Separate raw meat, poultry and sea food from other foods.</li> <li>• Use separate utensils and equipments such as knives and cutting boards for handling raw foods</li> <li>• Store food in containers to avoid contact between raw and prepared food</li> <li>• Raw food especially meat, poultry sea food and their juices can contain dangerous micro-organisms which can be transferred to other food during food preparation and storage</li> </ul> <p><b>3. Cook thoroughly</b></p> <ul style="list-style-type: none"> <li>• Cook food thoroughly, especially meat, poultry, eggs and sea food</li> <li>• Bring foods like soups and stews to boiling to make sure that juices are clear, not pink. Ideally, use a thermometer.</li> <li>• Reheat cooked food thoroughly</li> </ul> <p><i>Proper cooking can kill almost all dangerous micro-organisms. Studies have shown that cooking food to a temperature of 70 °C can help ensure that it is safe for consumption.</i></p> <p><b>Cooking safely in the microwave oven</b></p> <p><i>Microwave ovens can cook unevenly and leave cold spots where dangerous bacteria can survive. Make sure that food cooked in microwave oven is at a safe temperature throughout.</i></p> <p><b>4. Keep food at safe temperatures</b></p> <ul style="list-style-type: none"> <li>• Do not leave cooked food at room temperature for more than 2 hours.</li> <li>• Refrigerate promptly all cooked and perishable food (preferably below 5° C)</li> <li>• Keep cooked food piping hot (more than 60°C) prior to serving</li> </ul>	<ul style="list-style-type: none"> <li>• Do not store food too long even in the refrigerator</li> <li>• Do not thaw frozen food at room temperature.</li> </ul> <p><b>Thawing food safely in the microwave</b></p> <p>Microwave ovens can be used to thaw food, but can leave warm spots where micro-organisms can grow. Food thawed in the microwave oven should be cooked promptly.</p> <p><b>Safe temperatures for food</b></p> <ul style="list-style-type: none"> <li>• The danger zone is the temperature range of 5°C to 60°C in which micro-organisms multiply very fast.</li> <li>• Refrigeration slows bacterial growth. However, even when food is stored in the refrigerator or the freezer, micro-organisms can grow.</li> </ul> <p><b>How to keep food at safe temperatures</b></p> <ul style="list-style-type: none"> <li>• Promptly cool and store leftovers.</li> <li>• Prepare food in small amounts to reduce leftovers.</li> <li>• Leftover food should be stored in the refrigerator for longer than 3 days and should not be reheated more than once.</li> <li>• Thaw food in the refrigerator/cool location.</li> </ul> <p><b>5. Use safe water and safe raw materials</b></p> <ul style="list-style-type: none"> <li>• Use safe water or treat it to make it safe</li> <li>• Select fresh and wholesome foods</li> <li>• Choose foods processed for safety, such as pasteurized milk</li> <li>• Wash fruits and vegetables thoroughly, especially if eaten raw.</li> <li>• Do not use food beyond its expiry date.</li> </ul> <p><b>When buying or using food</b></p> <ul style="list-style-type: none"> <li>• Select fresh and wholesome food</li> <li>• Avoid food that is damaged or rotting</li> <li>• Choose food processed for safety such as pasteurized milk or irradiated meat</li> <li>• Wash fruits and vegetables with safe water, especially if eaten raw</li> <li>• Do not use food after its expiry date</li> <li>• Throw away smashed, swollen or oxidized cans.</li> <li>• Choose ready to eat, cooked or perishable foods that are stored correctly (either hot or cold, but not in the danger zone)</li> </ul>
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**Sources**

Five keys to safer food manual, available from [http://www.who.int/foodsafety/publications/consumer/manual\\_keys.pdf](http://www.who.int/foodsafety/publications/consumer/manual_keys.pdf)  
 Diarrhoeal disease, available from <http://www.who.int/mediacentre/factsheets/fs330/en/index.html>

National Digestive Diseases Information Clearinghouse (NDDIC), available from <http://digestive.niddk.nih.gov/ddiseases/pubs/diarrhea/#cause>

Compiled by Dr. Madhava Gunasekera of the Epidemiology Unit

**Table 1: Vaccine-preventable Diseases & AFP**

09<sup>th</sup> – 15<sup>th</sup> July 2011 (28<sup>th</sup> Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	01	01	00	00	02	01	50	48	+ 04.2 %
Diphtheria	00	00	00	00	00	00	00	00	00	-			00	-
Measles	01	00	00	00	00	00	00	00	00	01	01	83	56	+ 48.2 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	14	- 14.3 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	02	23	16	+ 43.7 %
Tuberculosis	28	01	05	01	24	00	02	06	10	77	132	4664	4719	- 01.2 %

**Table 2: Newly Introduced Notifiable Disease**

09<sup>th</sup> – 15<sup>th</sup> July 2011 (28<sup>th</sup> Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	08	04	06	03	00	02	03	02	12	40	36	2587	1999	+ 29.4 %
Meningitis	00	02 KD=1 ML=1	01 MT=1	00	00	03 KN=3	00	00	03 RP=2 KG=1	09	25	489	1029	- 52.5 %
Mumps	06	53	14	02	07	03	03	04	06	98	20	1529	569	+ 168.7 %
Leishmaniasis	00	00	01 MT=1	00	00	00	08 AP=4 PO=4	00	00	09	01	489	166	+ 194.6 %

**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.  
 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.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps.

Special Surveillance: Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008. .

**Dengue Prevention and Control Health Messages**

**Check the roof gutters regularly for water collection where dengue mosquitoes could breed**

**Table 4: Selected notifiable diseases reported by Medical Officers of Health**  
09<sup>th</sup> - 15<sup>th</sup> July 2011 (28<sup>th</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	161	4989	2	128	0	5	4	80	0	46	4	253	0	6	0	32	0	2	85
Gampaha	169	1808	3	85	0	11	2	32	0	17	9	354	0	19	25	101	0	4	87
Kalutara	25	731	3	94	0	4	0	32	0	20	4	180	0	1	0	5	0	0	92
Kandy	41	407	14	270	0	4	1	22	0	32	5	109	1	73	1	37	0	0	96
Matale	11	193	10	100	0	3	0	18	1	18	2	140	0	12	0	5	0	0	100
Nuwara	7	94	12	272	0	3	1	33	0	89	1	34	0	48	0	15	0	1	92
Galle	11	408	0	52	0	5	0	7	1	6	1	104	2	22	0	7	1	3	84
Hambantota	10	295	2	26	0	4	1	3	0	18	0	408	2	40	1	6	0	0	92
Matara	18	283	0	46	0	2	1	9	2	12	0	197	1	47	0	14	0	1	100
Jaffna	6	185	1	121	0	3	4	169	1	62	0	2	0	182	1	17	0	1	100
Kilinochchi	0	36	0	12	0	3	0	7	0	12	0	2	0	8	0	3	0	0	50
Mannar	1	23	1	12	0	0	0	18	0	78	0	12	0	30	0	2	0	0	100
Vavuniya	2	59	1	24	0	10	0	8	0	39	0	36	0	2	0	1	0	0	75
Mullaitivu	1	15	3	34	0	1	0	2	0	8	0	5	0	1	0	2	0	0	100
Batticaloa	9	637	10	489	0	4	0	5	6	21	1	21	0	1	0	2	0	4	86
Ampara	1	87	1	70	0	1	0	8	0	28	0	54	0	1	0	7	0	0	86
Trincomalee	8	119	9	510	0	2	1	3	0	8	0	82	0	4	0	6	0	0	83
Kurunegala	29	498	11	210	0	7	0	61	1	47	5	1352	0	47	1	22	0	4	87
Puttalam	10	312	3	119	0	0	0	18	0	9	3	92	0	16	0	6	0	1	75
Anuradhapu	5	171	2	81	0	1	0	2	0	24	0	230	0	16	0	9	0	1	95
Polonnaruw	2	199	2	84	0	1	0	9	0	12	1	73	0	1	0	12	0	0	100
Badulla	25	333	42	212	0	5	0	42	0	7	5	48	4	48	2	36	0	0	82
Monaragala	6	140	1	57	0	4	1	22	0	10	0	165	0	48	0	40	0	0	91
Ratnapura	20	521	12	332	0	5	1	31	0	16	14	341	1	24	0	25	0	2	72
Kegalle	25	359	4	75	0	12	0	50	0	22	6	248	0	19	6	89	0	0	82
Kalmune	2	23	4	426	0	0	0	0	0	15	0	4	0	2	0	2	0	1	69
<b>SRI LANKA</b>	<b>605</b>	<b>12925</b>	<b>153</b>	<b>3941</b>	<b>00</b>	<b>100</b>	<b>17</b>	<b>691</b>	<b>12</b>	<b>676</b>	<b>61</b>	<b>4546</b>	<b>11</b>	<b>718</b>	<b>37</b>	<b>503</b>	<b>01</b>	<b>25</b>	<b>88</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 15<sup>th</sup> July, 2011 Total number of reporting units =327. Number of reporting units data provided for the current week: 287

A = Cases reported during the current week. B = Cumulative cases for the year.

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**ON STATE SERVICE**

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