



WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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Vol. 37 No.13

27th March - 02nd April 2010

Effects of climatic change on human health

Over the past few years Sri Lanka, together with other countries in the world is experiencing changes of weather and climate patterns which are more extremes of nature. As a result natural disasters like floods, droughts are now commonly seen when compared with few a decades back.

According to the scientists who are working on weather and climate, over the last 50 years, human activities, particularly burning of fossil fuels, have released sufficient quantities of carbon dioxide and other greenhouse gases to trap additional heat in the lower atmosphere. This has created a warmer environment which in turn affects the global weather and climate.

In the last 100 years, the world has warmed by approximately 0.75°C. Over the last 25 years, the rate of global warming has accelerated, at over 0.18°C per decade. This leads to melting of glaciers in the polar areas, change in the precipitation of vaporized water in the air as well as changes in wind patterns. These changes are becoming more extreme, intense and more frequent.

Due to the melting of the polar glaciers, sea levels are rising. Change of precipitation pattern and changes in wind patterns has an effect on change in rain fall pattern. This climate change affects the fundamental requirements for health, **clean air, safe drinking water, sufficient food and secure shelter.**

With the elevation of the temperature amount of the pollen and other aeroallergen concentration increases giving rise to new cases of asthma as well as exacerbation of asthma in patients who are already suffering from the disease. It is said that ongoing increase of temperature further raises the occurrence of asthma cases. Intense

short-term fluctuations in temperature can also seriously affect health, causing heat stress (hyperthermia) or extreme cold (hypothermia) and lead to increased death rates from heart and respiratory diseases. Recent studies suggest that the record high temperatures in Western Europe in the summer of 2003 were associated with a spike of an estimated 70 000 more deaths than the equivalent periods in previous years. High temperatures also raise the levels of ozone and other pollutants in the air that exacerbate cardiovascular and respiratory diseases. Urban air pollution causes about 1.2 million deaths every year.

More variable rainfall patterns are likely to compromise the supply of fresh water. Globally, water scarcity already affects four out of every 10 people. A lack of water and poor water quality can compromise hygiene and health. This increases the risk of diarrhoea, which kills approximately 2.2 million people every year, as well as trachoma (an eye infection that can lead to blindness). Water scarcity encourages people to transport water from long distances and store supplies in their homes. This can increase the risk of household water contamination, causing illnesses. In extreme cases, water scarcity leads to drought and famine. Estimation shows that by the 2090s, climate change is likely to widen the area affected by drought, double the frequency of extreme droughts and increase their average duration six fold. Excess rainfall on the other hand cause flood and is a major cause for contamination of drinking water sources. They also cause drowning and physical injuries, damage homes and disrupt the supply of medical and health services.

Rising temperatures and variable precipitation are likely to decrease the production of staple

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foods in many of the poorest regions by up to 50% by 2020 in some countries, where food security is already a problem. This will increase the prevalence of malnutrition and under nutrition, which currently cause 3.5 million deaths every year. These deaths are due to both lack of sufficient nutrients to sustain life and vulnerability to infectious diseases such as malaria, diarrhoea, and respiratory illnesses.

Rising sea levels, another outcome of global warming, increase the risk of coastal flooding, and could cause population displacement without proper shelter. More than half of the world's population now lives within 60 kilometers of shorelines. Floods due to excessive raining can directly cause injury and death, and increase risks of infection from water and vector borne diseases. Population displacement could increase tensions and potentially the risks of conflict.

In addition, climatic conditions affect diseases transmitted via vectors such as mosquitoes. In this regards malaria and dengue are the leading diseases. Warmer climates give the places for breeding of these fresh water breeding mosquitoes and also take shorter time to reach adult stage. Increases of vector density invariably give the chance to disease spread among the population causing outbreak situations in endemic areas and spread to new areas.

Although global warming may bring some localized benefits, such as fewer winter deaths in temperate climates and increased food production in certain areas, the overall health effects of a changing climate are likely to be overwhelmingly negative.

Measuring the health effects from climate change can only be very approximate. Nevertheless, a WHO assessment, taking into account only a subset of the possible health impacts, concluded that the modest warming that has occurred since the 1970s was already causing over 140 000 excess deaths annually by the year 2004.

All populations will be affected by climate change, but some are more vulnerable than others. People living in small islands, developing countries and other coastal regions, megacities, and mountainous and polar regions are particularly vulnerable.

Children in particular, living in poor countries are among the most vulnerable to the resulting health risks and will be exposed longer to health consequences. The health effects are also expected to be more severe for elderly people and people with infirmities or preexisting medical conditions.

Areas with weak health infrastructure, mostly in developing countries, will be the least able to cope without assistance to prepare and respond.

Climate change can no longer be considered simply as an environmental or a developmental issue. It will affect the health and well-being of all populations, with impacts escalating into the foreseeable future. A greater understanding of the health implications of climate change and related development

choices can lead to improved policies and more active public engagement.

Protection from climate change is part of a basic, preventive approach to public health but not a separate or competing demand. The public health community has a wealth of experience in protecting people from climate sensitive hazards. Many of the most important actions are public health interventions of proven effectiveness, from controlling vector borne disease, to providing clean water and sanitation, and reducing reliance on energy sources that pollute the environment and harm health. Widening the coverage of these measures will save lives now, and is a critical contribution to the global effort to adapt to climate change.

Many policies and individual choices have the potential both to reduce greenhouse gas emissions and produce major health co-benefits. Actions such as shifting to cleaner energy sources, facilitating safe public and active transport such as cycling or walking as alternatives to using private vehicles - could reduce carbon dioxide emissions and improve health and making more sustainable dietary choices, bring important health gains to communities and individuals. These local and immediate benefits can offset a large part of the costs of climate change mitigation, and provide a strong political and personal motivation for action.

Addressing climate change presents a fundamental challenge to decision makers from the individual to the global level. It requires leadership, and an unprecedented degree of collaboration between communities and nations. The skills, capacity and shared values of the public health community can make an important contribution to a fair and effective response to climate change.

In response to health problems due to climatic changes in 2009, the World Health Assembly endorsed a new WHO work plan on climate change and health. This includes:

- **Advocacy:**
to raise awareness that climate change is a fundamental threat to human health.
- **Partnerships:**
to coordinate with partner agencies within the UN system, and ensure that health is properly represented in the climate change agenda.
- **Science and evidence:**
to coordinate reviews of the scientific evidence on links between climate change and health, and develop a global research agenda.

Health system strengthening:
to assist countries to assess their health vulnerabilities and build capacity to reduce health vulnerability to climate change.

These activities will lead to mitigate the effects of climate changes on human health.

Reference: <http://www.who.int/topics/climate/en/>

Table 1: Vaccine-preventable Diseases & AFP

20th - 26th March 2010(12th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2010	Number of cases during same week in 2009	Total number of cases to date in 2010	Total number of cases to date in 2009	Difference between the number of cases to date in 2010 & 2009
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	02	02	00	00	00	00	01	01	01	07	01	28	15	+ 46.4 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	-
Measles	00	00	00	01	01	00	00	00	01	03	03	27	35	- 22.8 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	06	07	- 14.3 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	01	05	18	- 72.2 %
Tuberculosis	03	64	17	01	06	32	01	01	00	125	99	2313	1861	+ 24.3 %

Table 2: Newly Introduced Notifiable Disease

20th - 26th March 2010(12th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2010	Number of cases during same week in 2009	Total number of cases to date in 2010	Total number of cases to date in 2009	Difference between the number of cases to date in 2010 & 2009
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	11	05	08	08	05	08	07	11	07	70	354	958	3258	- 70.6 %
Meningitis	02 KT=1 CB=1	01 NE=1	01 GL=1	00	01 AM=1	01 PU =1	03 PL=2 AP=1	02 MO=2	01 RP=1	12	17	391	232	+ 59.3 %
Mumps	03	01	02	00	02	01	00	00	00	09	33	211	531	- 60.2 %
Leishmaniasis	00	00	02 HB=1 MT=1	00	00	00	05 AP=5	00	00	07	09	90	325	- 72.3 %

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.
 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.

10th South East Asia Regional Scientific Meeting of the International Epidemiological Association

23rd - 26th May 2010

Colombo, Sri Lanka

Theme

"Epidemiological Methods in Evidence Based Healthcare"

Visit <http://www.episea2010.com>

Table 4: Selected notifiable diseases reported by Medical Officers of Health
20th - 26th March 2010(12th Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received %
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
Colombo	43	1372	7	40	1	5	0	16	0	5	9	171	0	3	1	19	0	1	62
Gampaha	23	1418	1	9	0	7	2	12	0	2	5	132	0	1	1	25	0	0	47
Kalutara	3	349	0	39	0	4	0	5	0	16	6	96	0	0	0	14	0	1	33
Kandy	10	457	3	79	0	0	1	7	0	1	1	21	4	51	0	21	0	0	48
Matale	2	285	9	168	0	0	0	7	0	57	1	26	0	0	0	14	0	0	67
Nuwara	5	54	1	29	0	0	0	35	0	3	2	8	4	27	0	12	0	0	69
Galle	13	185	10	52	0	3	0	0	0	5	6	17	0	2	0	4	0	2	63
Hambant	8	252	0	11	0	2	0	1	0	3	0	20	2	39	0	3	0	0	82
Matara	6	118	0	30	0	1	0	0	0	35	4	93	2	62	0	9	0	0	76
Jaffna	3	1804	0	43	0	1	1	255	0	5	0	0	0	93	0	21	0	1	17
Kili-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mannar	3	63	0	13	0	0	1	21	2	2	0	0	0	0	0	8	0	0	40
Vavuniya	5	467	0	13	0	1	0	23	2	7	0	0	0	0	1	6	0	0	50
Mullaitivu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Batticaloa	26	764	0	32	0	1	2	10	0	9	0	1	0	1	0	0	0	0	57
Ampara	1	38	0	20	0	1	0	3	0	6	1	16	0	0	0	6	0	0	14
Trincomal	9	647	1	44	0	4	0	3	0	7	0	8	0	4	1	9	0	0	20
Kurunega	11	429	0	59	0	2	0	9	1	4	1	124	1	19	4	36	0	1	55
Puttalam	2	447	0	21	0	3	0	29	6	120	0	45	0	0	0	3	0	0	33
Anuradha	5	657	0	19	0	0	0	3	0	21	1	17	0	13	1	19	0	4	37
Polonnar	9	108	0	19	0	1	0	1	0	2	0	31	0	0	1	14	0	0	86
Badulla	6	186	0	47	0	0	0	30	0	10	0	18	1	21	2	20	0	0	47
Monaraga	3	129	0	54	0	0	0	16	0	3	1	13	2	17	0	14	0	0	55
Ratnapur	17	407	2	85	0	3	1	6	0	8	1	102	0	25	2	35	0	1	39
Kegalle	1	297	0	17	0	4	0	21	0	15	2	74	0	5	0	34	0	0	27
Kalmunai	12	391	3	46		0	0	4	0	0	0	0	0	0	0	7	0	1	69
SRI LANKA	226	11326	37	989	01	43	08	518	11	346	41	1033	16	383	14	356	00	12	49

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 26th March, 2010 Total number of reporting units =311. Number of reporting units data provided for the current week: 205

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

PRINTING OF THIS PUBLICATION IS FUNDED BY THE UNITED NATIONS CHILDREN'S FUND (UNICEF).

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.

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