WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit
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Vol. 43 No. 45 29th – 04th November 2016

WEER SRI LANKA 2016

Effects of climate 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^{o}C. Over the last 25 years, the rate of global warming has accelerated, at over 0.18^{o}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 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

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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: Selected notifiable diseases reported by Medical Officers of Health 22nd – 28st Oct 2016 (44th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmani-asis		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	78	13875	1	153	1	12	0	53	0	60	1	258	0	7	2	42	0	0	2	392	1	52	0	0	69	88
Gampaha	23	5797	0	135	0	14	0	26	1	38	3	296	0	15	0	44	0	1	1	360	1	42	0	7	53	87
Kalutara	20	2964	4	95	0	10	0	33	4	34	2	392	0	8	1	27	0	1	5	254	3	87	0	0	57	79
Kandy	34	3632	3	146	0	17	0	21	0	35	0	112	0	89	1	47	0	0	3	213	0	40	0	9	91	100
Matale	13	942	0	60	0	1	0	14	0	4	0	84	0	20	0	16	0	1	0	34	1	55	0	18	38	77
NuwaraEliya	3	376	3	93	0	3	0	54	0	36	0	59	2	71	0	38	0	0	1	125	0	38	0	0	77	100
Galle	27	2107	2	129	0	8	1	9	0	10	8	261	2	106	0	9	0	0	2	257	0	35	0	3	55	90
Hambantota	7	696	1	74	0	1	0	5	0	61	0	95	0	61	0	95	0	0	1	210	0	15	0	309	83	100
Matara	15	1101	2	109	0	15	0	8	0	39	2	167	0	51	0	41	0	0	2	167	0	23	4	181	88	100
Jaffna	20	1892	15	304	1	9	1	80	2	62	0	17	2	600	0	9	0	0	4	160	0	58	0	1	92	92
Kilinochchi	0	74	0	38	0	1	0	36	0	10	0	13	0	24	0	1	0	0	0	10	0	10	0	0	50	100
Mannar	1	137	0	41	0	4	0	23	0	9	0	10	0	42	0	0	0	0	0	7	0	4	0	0	60	80
Vavuniya	1	229	1	14	1	5	0	92	1	34	1	15	0	11	0	6	0	0	1	28	0	10	0	6	100	100
Mullaitivu	0	163	0	27	1	5	1	19	0	41	0	24	0	6	0	2	0	1	0	23	0	11	0	6	80	100
Batticaloa	2	468	5	287	0	4	2	46	0	98	1	46	0	6	1	12	0	1	1	96	0	14	0	1	64	100
Ampara	0	223	0	49	0	2	0	0	0	21	0	26	0	0	0	10	0	0	0	146	0	5	0	8	43	86
Trincomalee	2	362	0	52	0	2	0	12	0	24	0	31	0	24	0	33	0	2	2	144	1	13	0	11	75	92
Kurunegala	13	2163	3	278	0	11	0	4	0	19	2	143	0	41	0	29	0	3	17	343	0	55	0	96	66	90
Puttalam	0	937	1	85	0	5	0	7	0	2	3	45	0	61	0	3	1	2	5	85	1	57	0	4	57	71
Anuradhapura	9	637	0	96	0	3	0	9	0	33	1	257	0	25	0	16	0	1	5	228	0	43	9	227	58	74
Polonnaruwa	2	408	0	39	0	4	0	12	1	15	0	87	0	4	0	4	0	0	1	132	0	18	3	116	71	86
Badulla	35	927	3	114	0	13	1	13	1	28	0	119	0	103	0	114	0	0	11	229	4	185	0	3	71	88
Monaragala	5	373	1	120	0	1	0	4	0	11	1	160	1	117	5	140	0	2	2	77	1	24	2	36	82	82
Ratnapura	18	2628	2	321	0	31	0	26	0	24	8	519	1	37	2	189	0	0	2	215	1	145	0	1	78	89
Kegalle	16	1299	1	73	0	19	0	32	0	53	1	167	0	30	1	30	0	0	2	299	1	52	0	2	64	100
Kalmune	16	483	1	91	0	3	0	5	0	53	0	21	0	0	0	5	0	4	6	97	0	25	0	0	54	92
SRILANKA	360	44893	49	3023	4	203	6	643	10	854	34	3424	8	1559	13	962	1	19	76	4331	15	1116	18	1045	68	90

Source: Weekly Returns of Communicable Diseases (WRCD).

*T=Timeliness refers to returns received on or before 28th October, 2016 Total number of reporting units 339 Number of reporting units data provided for the current week: 309 C**-Completeness

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

Table 2: Vaccine-Preventable Diseases & AFP

22nd – 28st Oct 2016 (44th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2016	Number of cases during same week in 2015	Total number of cases to date in 2016	Total number of cases to date in 2015	Difference between the number of cases to date in 2016 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	01	00	00	00	00	00	00	00	01	00	59	61	-3.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	01	00	00	01	00	00	00	00	02	04	06	338	333	+1.5%
Measles	02	00	00	00	00	01	02	00	00	05	23	351	2410	-85.4%
Rubella	00	00	00	00	00	00	00	00	00	00	00	09	08	+12.5%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Tetanus	00	00	00	01	00	00	00	00	00	01	00	09	14	-36.1%
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Japanese Encephalitis	01	00	00	00	00	00	00	00	00	01	00	17	10	+70%
Whooping Cough	01	00	00	00	00	00	00	00	00	01	03	61	92	-33.6%
Tuberculosis	74	25	16	05	02	13	00	09	02	146	119	7855	8339	-6.1%

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

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

Dengue Prevention and Control Health Messages

Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them

PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).

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**

ON STATE SERVICE

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