

Climate Change Impacts Upon Public Health

A Discussion Paper for Community Resilience

June 2015

Climate change may become the greatest health threat the world has ever faced.



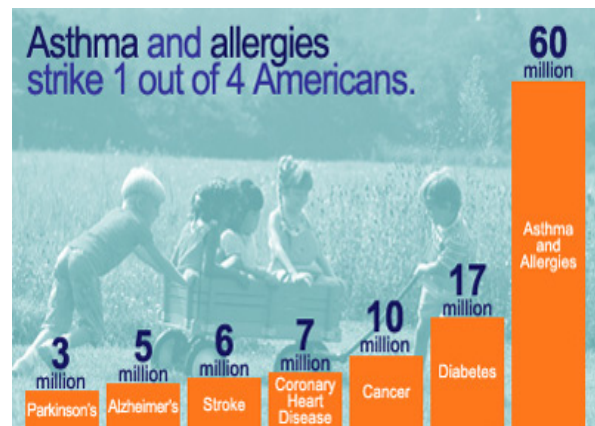
(Globalsolutions.org)

Problem:

Greater climate variability means regions of the country can expect to see an increase in chronic health conditions as well as new types of human health hazards, which will lead to more public health emergencies.

Asthma and Allergies:

According to the U.S. EPA, warmer weather will likely spread the invasive range of many weed species into new regions. The warming change in climate may affect allergies and respiratory health.

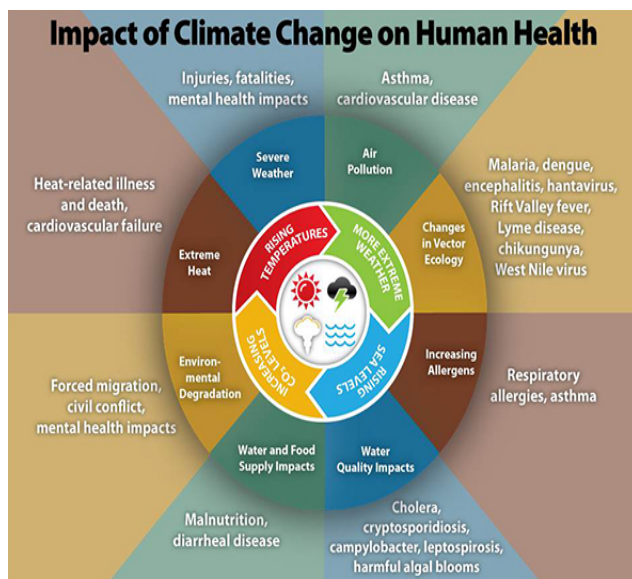


(Aafa.org)

Allergy and asthma season is already occurring earlier and has been extended two to four weeks in the Northern Hemisphere since 1970. Longer seasons boosting pollen production actually allow the allergenic proteins in the pollen to become stronger, which contribute to significant respiratory and other health related problems throughout the world. (US EPA, 2012)

Economically, the loss of school days and lost productivity directly attributable to asthma in the U.S. cost \$56 billion in 2007 with costs projected to increase each year. (American Lung Association, 2012)

Approximately 10%-30% of individuals in the industrialized world are affected by allergic conditions, and this number is increasing. Asthma affects roughly 8%-10% of Americans. (MedicineNet.com, 2015)



(<http://www.cdc.gov/climateandhealth/effects/>)



(Organsofthebody.com)

Spread of Infectious Diseases:

Vector Borne Diseases (VBD) - Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later inject it into a new host during their subsequent blood meal.

Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 1 million deaths worldwide annually. Many of these diseases are preventable through informed protective measures.



(Mainepest.com)

Mosquitoes are the best known disease vector. Others include ticks, flies, sandflies, fleas and some freshwater aquatic snails.

Mosquito borne diseases are on the increase in the U.S., such as West Nile

Virus, (causing over 1500 deaths in the U.S. annually), dengue fever, (appearing in Florida and popular worldwide tourist areas), encephalitis and malaria. All have been directly related to climate change.

Tick borne diseases such as Lyme disease, Rocky Mountain Spotted Fever and Babesiosis, or animal malaria have begun appearing in the northern latitudes of the U.S. (World Health Organization, 2015)

Effect of Climate Change on Rodent Populations:

Rodents, another VBD carrier, can be infected by a wide range of pathogens. Warmer and wetter climates can lead to an increase in rodent populations.



(1pest.com)

Hantavirus in the U.S. has been associated with increases in mouse and rat populations, increased human interaction and the likelihood of disease transmission. People get it by breathing in aerosolized mice droppings and dried urine -- that is, mouse dust -- so victims have to be in close contact with the mice or their nests. It is not transmitted between humans.

Malnutrition and Food Supply:

Climate change has a direct impact upon crops, food supplies and human health. Crop pests, pathogens and weeds take

up to 40% of the global yield annually, amounting to \$300 billion in losses. In an effort to control food supplies by forcing faster growth periods, larger yields and control of crop pests and diseases using increased amounts of fungicides, pesticides and herbicides, we have increased the chemical threats to human health. (CDC 2014)



(Ca.uky.edu)

Crop diseases can be animal, fungal, bacterial or viral in origin. Fungal diseases can be spread via spores carried by the winds during severe weather events, leading to an increased threat to food supplies through disease.

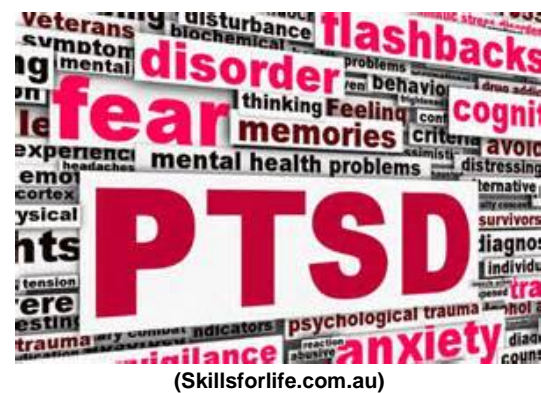
Milder winters have been shown to increase the survival rate of frost-sensitive insects, leading to an increased threat of crop destruction by insects.

Crop diseases spread through an insect vector can spread disease to crops and food supplies destroying them or making them unusable for consumption, leading to severe malnutrition in some countries or food borne illness.

Mental Health:

Extreme weather events can affect mental health in several ways. Following

disasters, mental health problems increase, both among people with no history of mental illness, and those at risk – a phenomenon known as “common reactions to abnormal events.” These reactions may be short-lived or, in some cases, long-lasting. (CDC, 2014)



(Skillsforlife.com.au)

Research demonstrated high levels of anxiety and post-traumatic stress disorder (PTSD), among people affected by hurricanes, floods, heat waves and wildfires. All of these events are increasingly fueled by climate change.

Other health consequences of intensely stressful exposures are also a concern, including pre-term birth, low birth weight, and maternal complications.

How can we prepare for climate change?

Even if mitigation strategies are successful at reducing greenhouse gas emissions in the future, our climate will still continue to change.

Communities must also adapt to climate change now in order to reduce the negative health effects of climate change later.

Climate adaptation strategies need to be developed nationwide, however to effectively minimize negative health effects, there needs to be:

1. Increased awareness of potential climate change-related public health impacts.
2. Improved surveillance and monitoring of climate risks and related outcomes
3. Maintenance of a robust public health infrastructure
4. Expanded research on the health impacts of climate

Healthy, equitable, and resilient communities that can mitigate and respond to climate change and protect vulnerable populations

(California Climate Adaptation Strategy, 2009)

Conclusions:

In order to successfully prepare for the inevitable effects of climate change, certain public health barriers must be eliminated thus promoting a deliberate and tactical approach toward strategic planning for the immediate and long term future.

Public health funding needs to be restored to increase staffing and to allow for effective research and planning for any and all possible socio-economic climate change effects upon people, community, business and industry, government and the economy.

The inability to plan for, develop and implement public health adaptation

strategies today will have far greater socio-economic impacts tomorrow.

Additional Resources

American Lung Association, 2012, *Asthma in Adult Fact Sheet*, Retrieved on May 01, 2015

from: <http://www.lung.org/lung-disease/asthma/resources/facts-and-figures/asthma-in-adults.html>

California Climate Adaptation Strategy, 2009, Retrieved on May 15, 2015 from: <http://www.climatechange.ca.gov/adaptation/>

Centers for Disease Control and Prevention, (CDC), 2014, *Climate Effects on Health*, Retrieved on April 27, 2015

from: <http://www.cdc.gov/climateandhealth/effects/>

MedicineNet.com, 2015, *Allergies*, Retrieved on May 05, 2015

from: <http://www.medicinenet.com/allergy/article.htm>

U.S. EPA, Research & Development, 2012, *Allergies Getting Worse?*

Retrieved on April 27, 2015

from: http://www.epa.gov/research/gems/scinews_aeroallergens.htm

World Health Organization, 2015, *Climate Change and Human Health-Risks and Responses. Summary.*

Retrieved on April 30, 2015 from:

<http://www.who.int/globalchange/summary/en/index5.html>