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It is surprising, but climate change, not COVID-19 or world hunger, is the most serious threat to people's health everywhere. The potentially devastating effects from our gluttonous use of fossil fuels (coal, oil, and natural gas), deforestation, and changes in land use are not 100, 50, or even 20 years away. The World Health Organization (WHO) has documented that health systems are already providing care to those affected by global warming and increased particle pollutants.

Key takeaways:

- Global warming and air pollutants from our use of fossil fuels are already adversely affecting our health.
- Cardiovascular, respiratory, and cerebrovascular diseases will increase unless we take meaningful action to reduce the emissions and pollutants that cause inflammation and result in chronic disease.
- Global warming and the extreme weather events already occurring also threaten our food sources, water, safety, and health.

The World Health Organization reports that approximately 250,000 people will die between 2030 and 2050 from malaria, heat stress, malnutrition, and diarrhea. The cause? Climate change because it threatens our air, food, water, health, and homes. By 2030, the WHO also estimates that the cost of damage to our health will be \$2 to \$4 billion.

How climate change affects our health

Climate change will continue to be destructive until the world reduces greenhouse gases and uses cleaner energy, transportation, and food production. Storms, floods, and heatwaves have disrupted ecological and food systems and have unleashed the spread of food-borne, vector-borne, and water-borne diseases.

The resulting health issues affect not only our cardiovascular, respiratory, and gastrointestinal systems but also our mental health. Extreme environmental events result in injuries, emergency room visits, hospital stays, and premature deaths.

Breaking down climate change

Climate change impacts each of us in one or more of the following ways.

Poor air quality

Global warming worldwide is due to increasing greenhouse gases in the atmosphere.

Increased temperatures have resulted in an extended allergy season in central North America, with the ragweed pollen season lengthening by between 11 and 27 days.

Increased indoor and outdoor pollutants, such as ground-level ozone and fine particulate matter, cause respiratory issues and exacerbate asthma, chronic obstructive disease, and emphysema. Scientists predict that changes in the ozone will lead to increased cases of acute respiratory illnesses by 2030.

These tiny particles irritate the eyes, throat, and lungs. Prolonged exposure or higher levels of pollutants cause shortness of breath and possibly lung cancer. Pregnant women who inhale these particulates for extended periods run the risk of birth complications, such as low birth-weight babies. Irritation and inflammation of the respiratory system also increase one's susceptibility to already existing airborne diseases, such as COVID-19.

Cardiovascular & cerebrovascular issues

Poor air quality creates additional risks for those with cardiovascular or cerebrovascular disease. Particle pollution or extreme heat can increase the risk of heart attack and stroke.

Tiny pollutant particles are absorbed deep into the lungs, making it difficult to exchange carbon dioxide for oxygen, causing the heart to work harder.

Toxic particles cross the air sacs deep in the lungs into the blood, triggering an inflammatory response. White blood cells and platelets (clotting factors) are activated. The platelets can clump in the blood vessels of the brain, resulting in a stroke. In 2021, *The Lancet* confirmed, “the risk for ischemic stroke is increased after short-term or long-term exposure to air pollution.”

Weather events

Climate change causes more frequent and/or intense weather events. Heat and droughts have already caused extensive wildfires in several areas. Flooding due to excessive precipitation and hurricanes have occurred in others, often causing injuries or premature deaths. These weather events will continue to interfere with infrastructure critical to the health of a community, including clean water, power, transportation, and emergency response systems.

Particulates from the wildfires that have burned 19.3 billion acres in Canada have led to dangerous air alerts in New York, Washington DC, and the Midwest. These small particle matter 2.5 (PM2.5) pollutants can lodge in the lungs, causing irritation and inflammation, exacerbating existing lung issues, or creating new ones.

Extreme heat events are increasing the number of premature deaths. Based on current data, scientists have predicted summertime heat-related deaths for more than 200 United States

cities to increase to 11,000 in 2030, with 27,000 more deaths predicted for 2100.

The heart works harder in extreme heat to maintain a normal core body temperature. This strain can cause chest pain or tightness, increased heart rate, shortness of breath, and fatigue. Heat-induced stress can lead to a heart attack in those with cardiovascular disease.

Insect-borne diseases

With higher temperatures and rainfall pattern changes, diseases such as West Nile virus, Lyme disease, dengue, and malaria will increase as the habitat of the vectors or mosquitoes that carry the disease expands. Vaccination and preventive practices will need to be reviewed.

Water-related illnesses

Our sources of drinking water, shellfish harvesting waters, and recreational waters will be polluted as runoff from extreme rain events contaminate those areas. Approximately half the globe deals with severe water scarcity at least one month a year. As clean water sources become scarcer, dehydration and the spread of water-borne pathogens become more widespread and frequent.

Food scarcity

Increased heat and flooding will increase the number of pathogens that find their way into agricultural environments causing food

contamination. The risk of food scarcity is further complicated by increased carbon dioxide levels in the air because pollutants will lower the nutritional value of most crops.

Food shortages, lower-quality food, and increasing food costs will lead to malnutrition in poorer communities. Malnourishment weakens the immune system and leads to a higher risk of illness and death in these communities.

Mental health

Displacement due to extreme weather causes increased stress as people search for a secure place to live, clean food and water, and healthcare. Symptoms of depression and anxiety increase as temperatures rise.

Researchers have linked elevated temperatures to additional suicide attempts. With every increase of 1°C (33.8°F) above 24°C (75.2°F), researchers have found a 1.9% increase in mortality among those without mental health issues. For those with mental disorders, researchers found suicide rates to be significantly higher at 5.9%. Those with depression or cognitive decline have the highest mortality rate due to impaired reasoning or ability to mobilize resources to reduce heat exposure.

Decreased air quality has also been linked to the risk of depression and anxiety. Researchers have found that exposure to pollutants such as PM2.5 or nitrogen dioxide increases acute psychiatric hospitalizations for post-traumatic

stress, depression, anxiety, and attempted suicide.

Researchers at CU Boulder have linked climate change to violent crime. They predict the commission of two to three million more violent crimes by 2100. This increase is attributed to warmer temperatures, which allow people more opportunities to interact in public.

The impact of climate change will be hardest on vulnerable populations, those with low incomes, children, pregnant women, the elderly, outdoor workers, people experiencing homelessness, and those with physical or mental disabilities or chronic health conditions. Living in areas particularly susceptible to extreme weather or air pollution also increases health risks. Those having access to quality healthcare and the funds to relocate to secure safe housing, food, and water, will better reduce their potential morbidity or mortality.

Resources:

1. [Climate Change and Health Equity.](#)
 2. [Climate Change and Cardiovascular Health.](#)
 3. [Ambient air pollution and the risk of ischaemic and haemorrhagic stroke.](#)
 4. [Mental Health Disorders and Summer Temperature-Related Mortality: A Case Crossover Study.](#)
 5. [Particle Pollution.](#)
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